R E P O R T R E S U M E S

ED 010 562 56

SYSTEM DESIGN FOR A CONTINUOUS PROGRESS SCHOOL--PART II, SURVEILLANCE AND DETECTION SYSTEM.

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REPORT NUMBER NDEA-VIIA-1130-05 PUB DATE 13 MAR 64
REPORT NUMBER BR-5-0738-05
REPORT NUMBER TM-1493/104/00
GRANT OEG-7-14-9120-217
EDRS PRICE MF-$0.09 HC-$2.08 52P.

DESCRIPTORS- *PROGRAMED INSTRUCTION, PROGRAM DEVELOPMENT, PROGRAM ADMINISTRATION, STUDENT EVALUATION, STUDENT TEACHER RELATIONSHIP, *ACADEMIC ACHIEVEMENT, STUDENT PROBLEMS, *STUDENT RECORDS, *EXPERIMENTAL SCHOOLS, EXPERIMENTAL PROGRAMS EXPERIMENTAL CURRICULUM, *SYSTEMS ANALYSIS, LABORATORY SCHOOLS, CONTINUOUS PROGRESS PLAN SCHOOLS, BRIGHAM YOUNG UNIVERSITY, PROVO UTAH, SANTA MONICA, CALIFORNIA

THE DESIGN OF A SURVEILLANCE AND DETECTION SYSTEM WAS PRESENTED FOR APPLICATION TO THE CONTINUOUS PROGRESS SCHOOL, DEVELOPED BY DR. EDWIN READ OF BRIGHAM YOUNG UNIVERSITY. THE PURPOSE OF THIS SYSTEM, PART OF AN INFORMATION PROCESSING CENTER, WAS (1) TO MONITOR AND SURVEY THE STUDY ACTIVITIES OF STUDENTS, (2) TO DETECT THE PRESENCE OF REAL AND IMMINENT PROBLEMS IN STUDENT PERFORMANCES, AND (3) TO ALERT APPROPRIATE PERSONNEL FOR ACTION. THE SYSTEM WOULD FOLLOW UP ON STUDENT PERFORMANCE OF ASSIGNED TASKS, CONDUCT PERIODIC REVIEWS OF STUDENT PERFORMANCE TO COMPARE ACTUAL PERFORMANCE WITH THAT EXPECTED, AND DETERMINE THE PERSON TO BE ALERTED IN THE EVENT OF TROUBLE. FLOW DIAGRAMS OF THE SYSTEM WERE INCLUDED IN THE REPORT. RELATED REPORTS ARE ED 010 561, ED 010 563, AND ED 010 564. (AL)

ED010562

TM-1493/104/00

System Design for a Continuous Progress School:

Part II Surveillance and Detection System

13 March 1964

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TM-1493/104/00

TECHNICAL MEMORANDUM

(TM Series)

The research reported herein was conducted under SDC's independent research program and Grant 7-14-9120-217, U. S. Department of Health, Education, and Welfare, Office of Education.

System Design for a Continuous Progress School: Part II, Surveillance and Detection System

by

Robert L. Egbert and John F. Cogswell
13 March 1964
(Principal Investigator, David G. Ryans)

Title VII of P.L. 85-864
National Defense Education Act of 1958
Grant 7-14-9120-217

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SYSTEM DESIGN FOR A CONTINUOUS PROGRESS SCHOOL: PART II

SURVEILLANCE AND DETECTION SYSTEM

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PREFACE

This is the second document in a series describing the Continuous Progress School, as designed and described by Dr. Edwin Read and his staff at Brigham Young University Laboratory School. Whereas Part I consisted largely of a reflection of what is being done or being planned at the Laboratory School, Part II represents, for the most part, an attempt to design a subsystem viewed as being necessary but which now exists in only fragmentary form.

ABSTRACT

This document presents the design of a Surveillance and Detection System for the Continuous Progress School. This function, viewed as part of the Information Processing Center, automatically monitors inputs describing student performance, detects the presence of trouble, and determines the persons to be alerted in the event of trouble.

INTRODUCTION

To the thoughtful observer, the problem of control--control in the sense of being aware of and attempting to influence student progress--becomes much greater in the Continuous Progress School (CPS) than it is in a traditional school. The primary reason for this increase in the control problem is that the role of the teacher is changed. In the traditional school the teacher arranges instruction to his advantage, from a management point of view. This permits him to know where each student is in his progress and, presumably, when the student needs help. In the CPS, the teacher does not exercise the control function to nearly so great a degree. In fact, a student could proceed for weeks without ever having personal contact with a teacher.

For students who take the initiative in seeking help when they need it, the concept of control, as used here, is superfluous. But for students who are inclined to avoid taking appropriate steps when in trouble, the school should be prepared to take the initiative. The Surveillance and Detection System (S&DS) has been formulated to facilitate this initiative in the CPS.

As the name "Surveillance and Detection" implies, the purpose of this system is, first, to monitor or survey the activities of students; second, to detect the presence of trouble when it occurs or is imminent; and third, to alert appropriate personnel for action.

The S&DS operates in two general kinds of circumstances. It follows up to make sure students actually carry through such assigned tasks as picking up supplies from the Materials Center or using equipment as scheduled. It also conducts periodic reviews of student performance, compares actual performance with that expected, and alerts responsible officials to any major discrepancies.

OVERVIEW OF SURVEILLANCE AND DETECTION SYSTEM OPERATION

In order to give a general picture of the Surveillance and Detection System in operation, Figure 1 has been developed. In summary fashion, Figure 1 includes essentially the entire operation of the S&DS.

The sensors--the agents responsible for gathering information--are external to the Information Processing Center (IPC); the processors of the S&DS are located within the IPC; but the executors--the agents responsible for implementing action --are again external to the IPC. Since the sensors and executors really belong to other subsystems, messages are indicated as coming from or going to them but no details are given for preceding or succeeding events. Our primary concern here is with the processor function.

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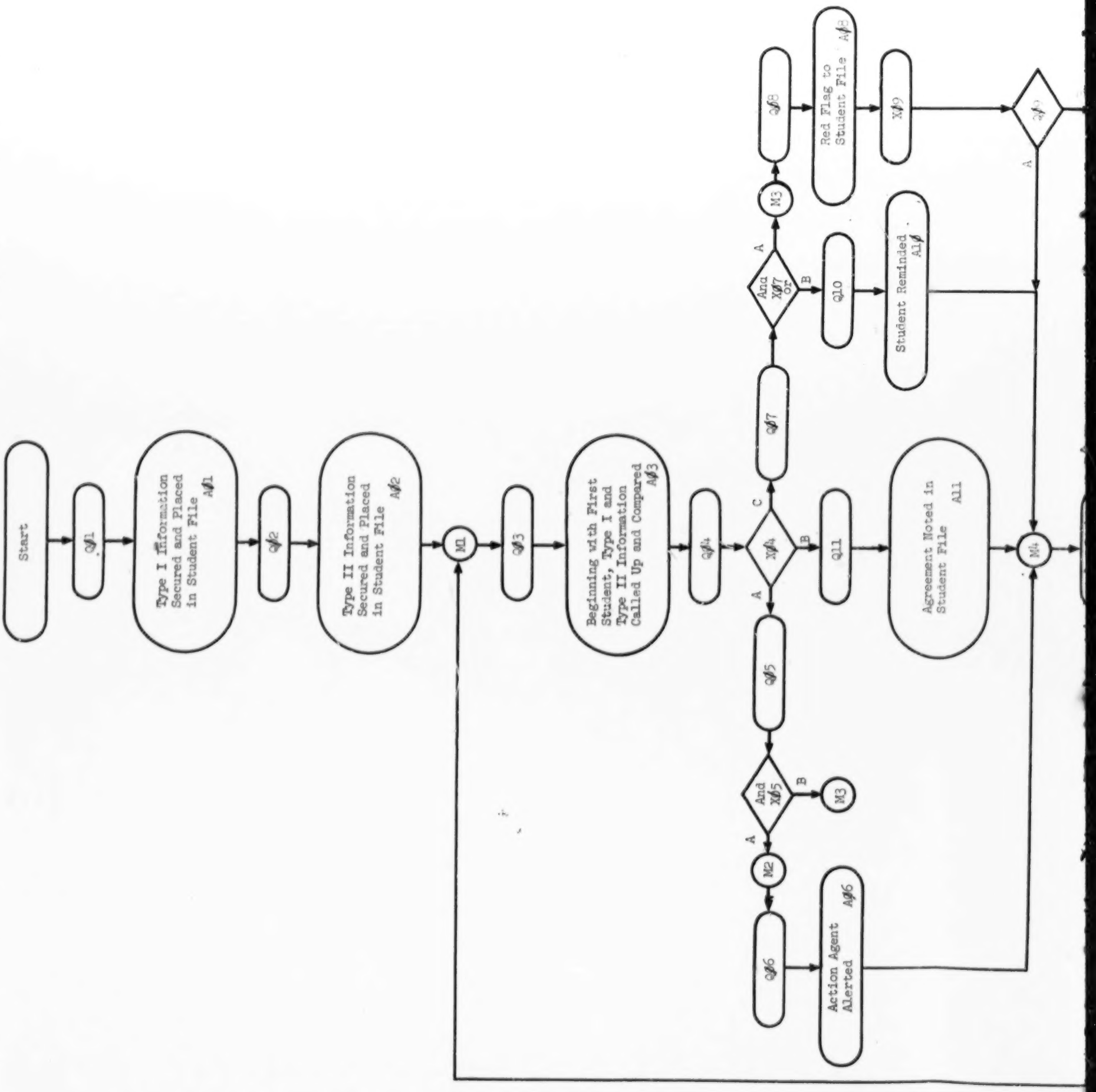
Start
Q1
Type I Information Secured and Placed in Student File A01
Q2
Type II Information Secured and Placed in Student File A02
M1
Q3
Beginning with First Student, Type I and Type II Information Called Up and Compared A03
Q4
And X04
A
B
C
Q5
And X05
A
B
M3
M2
Q6
Action Agent Alerted A06
Q7
Ana X07 or
A
B
Q10
Student Reminded A10
M3
Q8
Red Flag to Student File A08
X09
Q9
A
Q11
Agreement Noted in Student File A11
M4

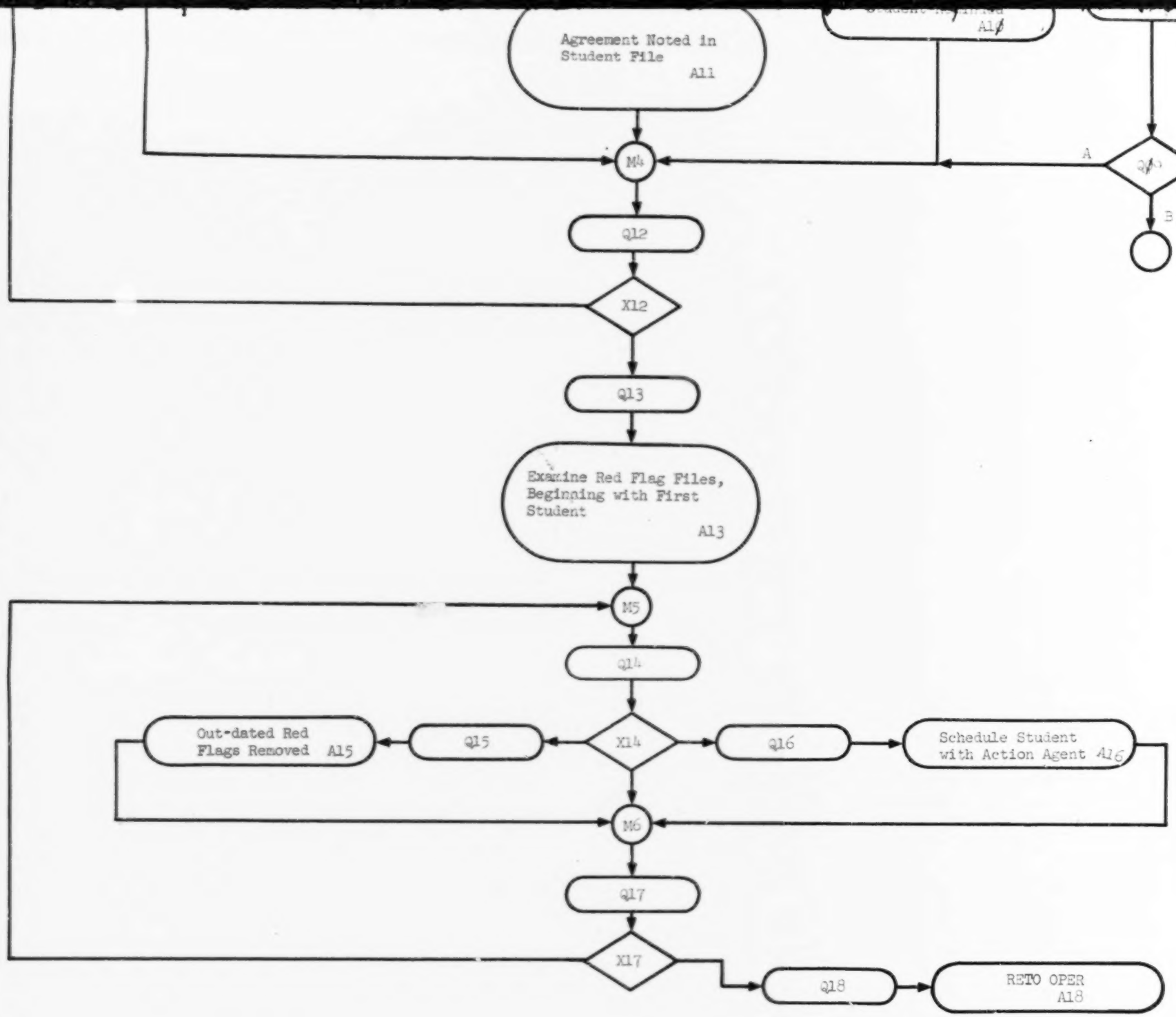

Figure 1. Generalized Picture of Surveillance and Detection System

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The first activity represented in Figure 1 is the gathering and placing in the student's file of type I information (Aϕ1). (The gathering of information--a sensor activity--is described in detail in other documents.) Type I information concerns that which the student is scheduled or expected to do. For example, he may be scheduled to use a movie projector and a film at 11:30 on Friday; or, he may be expected to complete the third unit of American History by April 26; or, he may plan to become a chemist. Type I information is predictive information against which type II information, student progress, can be compared.

Type II information is next shown as being gathered and placed in the student's file (Aϕ2); then, beginning with the first student, type I information, student schedule and/or expectancies, is compared with type II information, student progress (Aϕ3). Such comparisons are made periodically with the period varying from daily, for specifically scheduled activities: to weekly, for unit and course completion dates; to semiannually, for a review of interest and achievement patterns.

When the comparison is made between expected and actual student performances, if these agree (Q11), this fact is noted in the student's file (A11). If actual performance does not measure up to that expected (Qϕ7), the student is reminded (A1ϕ), and a red flag is placed in his file (Aϕ8). Sometimes the red flag file is full and cannot accept any more red flags. When this happens (M2 from Xϕ9), an action agent is alerted (Aϕ6). If the student has failed badly or if he has failed more than an acceptable number of times on the same performance or type of performance (Qϕ5), the appropriate action agent is alerted (Aϕ6), and a red flag is placed in the student's file (M3 to Aϕ8).

The red flags mentioned above are of varying types, depending on the nature and seriousness of the lapse. Each red flag simply indicates that a student has failed in a given manner, and the school needs to be alert to this fact because the student may need special help.

On a predetermined schedule, student red flag files are reviewed (A13). If the student does not appear to be in any difficulty, outdated red flags are removed (A15). If he does appear to be in difficulty, an appointment is made for him with an appropriate action agent (A16). When all red flag files have been examined, the S&DS returns to normal activity (A18).

DETAILS OF SURVEILLANCE AND DETECTION SYSTEM

As has been mentioned, the S&DS has three separate functions: (a) sensing type I and type II information; (b) comparing type I with type II information; and (c) alerting appropriate action agents, either directly or via red flags, of discrepancies between type I and type II information. These three functions are described, for different types of activities, in most of the flow diagrams in this section.

Comparison of Student Progress with Expected Completion Date (ECD)

Of almost inevitable, immediate concern to those viewing the CPS is the problem of knowing whether the student is making satisfactory progress. Development of student expectancies, as discussed in detail in TM-1493/103/00, is a major step toward solution of the problem; however, the student's progress must be compared with his quality and quantity expectancy levels if the expectancies are to have value. At the time a test is scored (see TM-1493/103/00, Figure 2), the quality comparison is made; Figure 2 in the present document shows the corresponding quantity comparison. Such quantity comparisons are made on a weekly basis.

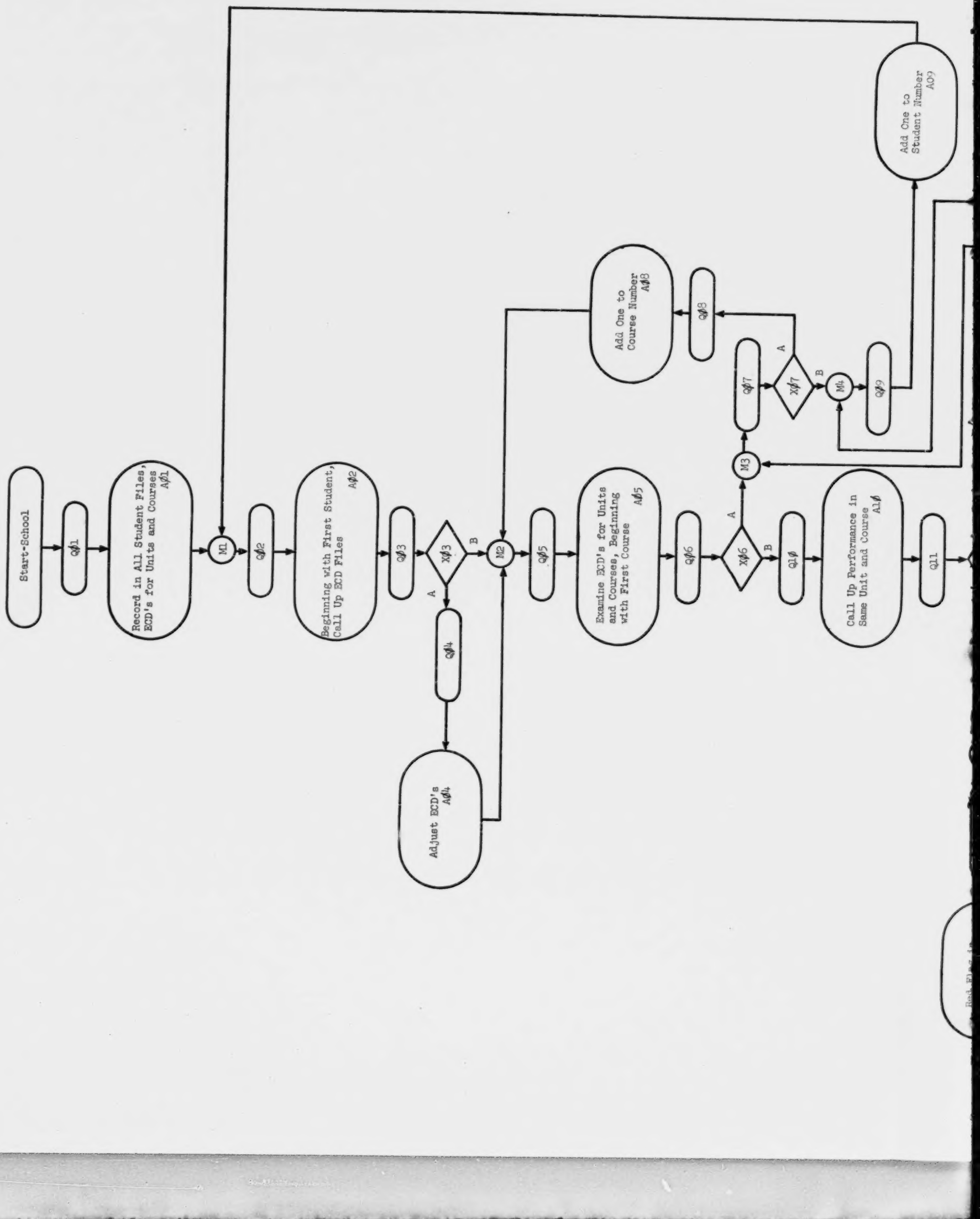
As was the case in Figure 1, the first activity of Figure 2 is the gathering and recording of type I information--in this instance, unit and course expected completion dates (ECD's) (AØ1). This, of course, is a preparatory activity.

Next, the ECD files are called up, beginning with the first student (AØ2). If the student has been absent during the week under review, (QØ4), his ECD's are adjusted (AØ4); otherwise, the unit and course ECD's are examined, beginning with the first course (AØ5). If the student was not expected to complete a unit in a given course (QØ7), the next course is brought up (XØ6 to XØ7 to AØ8 and AØ5), unless this was the last course for this student (QØ9), in which event, the file on the next student is called up (XØ6 to XØ7 to AØ9 and AØ2).

If the student should have completed a unit (XØ6 to Q1Ø), his performance in the same unit and course is brought up for comparison (A1Ø). If the student failed to complete the scheduled unit (X11, branch A, via M5 to A12), a red flag is sent to his file (A12). If the red flag file is full (Q14), an action agent is alerted (A14). A student who completes a scheduled unit (Q15) may have done so ahead of time (Q18), on time (Q19), or behind schedule (Q16). For those students on schedule, this fact is noted (A19); for those ahead of schedule, this fact is noted (A19) and the ECD's are adjusted (A18). If a student is behind schedule, this fact may already have been noted. In this case, his completion of the unit is recorded (A19) and the ECD's adjusted (Q16 to X16 to Q17 and A17). If his being behind schedule has not previously been stated, a red flag is sent to his file (X16 via M5 and Q12 to A12) in addition to recording his completion of the unit (A19).

When comparison of a given course has been completed (Q2Ø), the next course is called up (X2Ø branch A to M3 to XØ7 to QØ8), or the next student is called up (X2Ø branch B to M4), unless the comparisons have all been completed (Q21), in which case the S&DS returns to other activities (A21).

One of the interesting and perplexing aspects of the above process is a definition of being ahead of or behind schedule--either enough so that a red flag should be raised or enough so that future ECD's should be adjusted. At least three variables should probably influence the judgment: (a) content of the unit and course; (b) stage of the course; and (c) student characteristics.


Start-School
Q01
Record in All Student Files, ECD's for Units and Courses A01
M1
Q02
Beginning with First Student, Call Up ECD Files A02
Q03
X03
A
B
Q04
Adjust ECD's A04
M2
Q05
Examine ECD's for Units and Courses, Beginning with First Course A05
Q06
X06
A
B
Q10
Call Up Performance in Same Unit and Course A10
Q11
M3
Q07
X07
A
B
M4
Q09
Add One to Course Number A08
Q08
Add One to Student Number A09

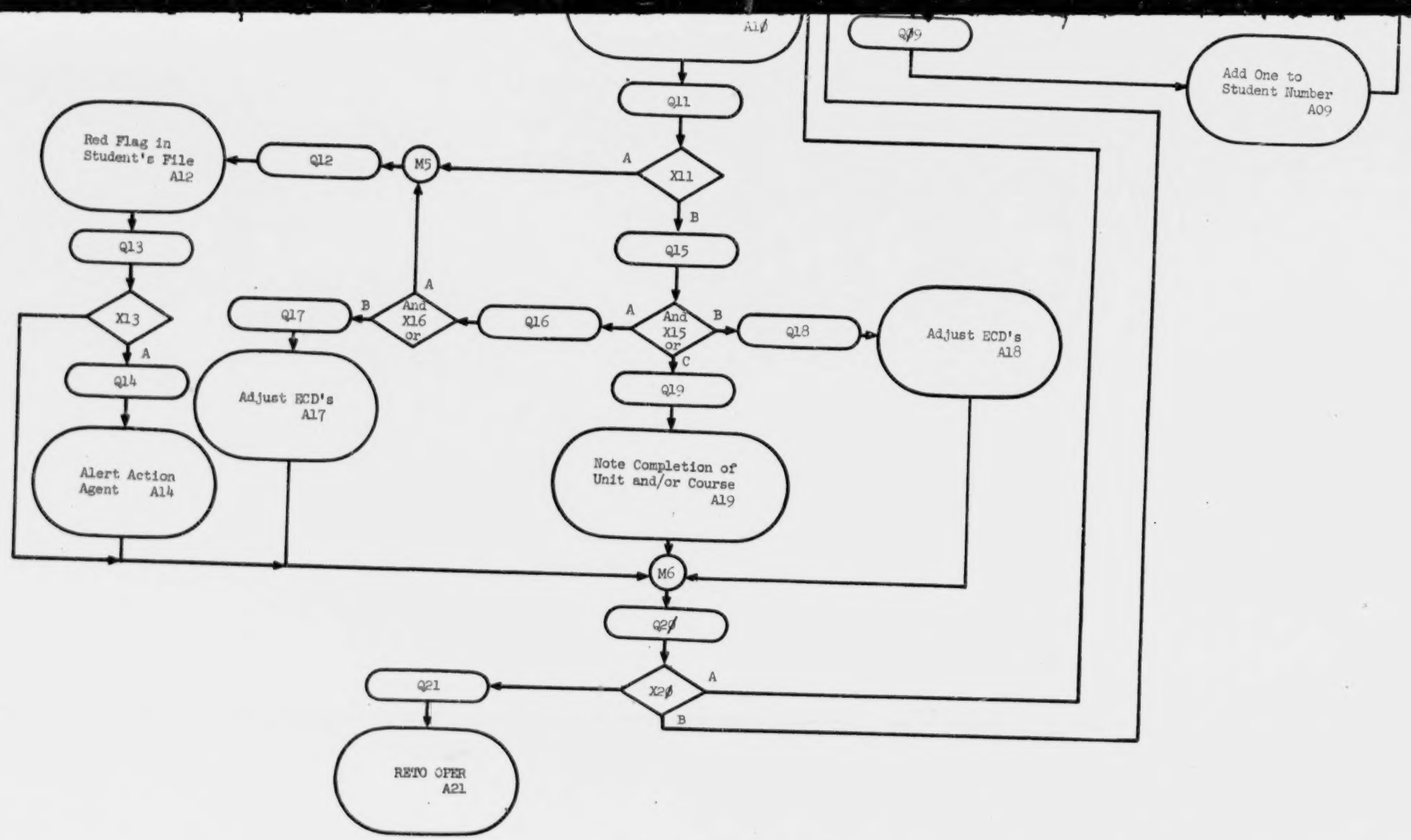


Figure 2. Comparison of Progress with Expected Completion Date (ECD)

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Some types of work lend themselves to fairly precise predictions of completion dates, e.g., a unit in geometry. Other types of work are much more variable in their demands, e.g., analyzing an unknown in chemistry or writing a research paper for history.

Students vary tremendously in their performance patterns. Some proceed methodically and evenly. Others move in great, unequal spurts. The CPS is designed to accommodate and to utilize this variety of patterns, but it must also be able to recognize when the pattern for a given student demands external attention.

At the present time defining limits for being ahead of or behind schedule have not been established. Ultimately this must be done, but it must be accomplished with care and flexibility.

Comparison of Daily Schedule with Actual Use

One of the more complex innovations in the CPS is the introduction of a daily schedule unique to each day. This schedule has a number of uses. First and most obvious is that it actually "controls" the minute-by-minute operation of the school. A second very important, though less obvious, use is in keeping track of the activities of individual students. This purpose, which is an aspect of the S&DS, is depicted in Figure 3.

Based on faculty and student requests and on space and equipment availability, a schedule is constructed and filed (AØ1). Actual space, equipment, and personnel use is also recorded and filed (AØ2). (The schedule and use files are logically arranged so that comparisons can be made readily.)

At the close of each day, daily schedule and use files are called up and compared (AØ3, AØ4 and AØ5). If facilities are used as scheduled (XØ6 branch A to Q18), that item is cleared from the schedule and use files (A18). Students or teachers who must cancel a scheduled appointment and who do not wish the appointment to be automatically rescheduled file a schedule override slip (AØ7). The override slips are called up by the IPC; and if a slip has been filed, the item is cleared from the schedule and use files (XØ9 branch A, A18). If the facilities are not used because the student is absent, he is rescheduled for the next day (XØ9 to X1Ø via M4 to A17). If the student missed a relatively unimportant appointment (X1Ø to Q13), he is reminded of the fact (A14), and a red flag is sent to his file (A15). If the red flag file is full (X16 to M2), an action agent is alerted (A12). If the student has missed a very important appointment (Q11), a red flag is placed in his file (X11 to M3) and the appropriate action agent is informed (A12). In either event, he is rescheduled in the missed activity (A17).

When one item on the schedule has been checked (Q19), the next one is called up (A20), unless all items have been examined (Q21), in which case the S&DS returns to its normal operating state (A21).

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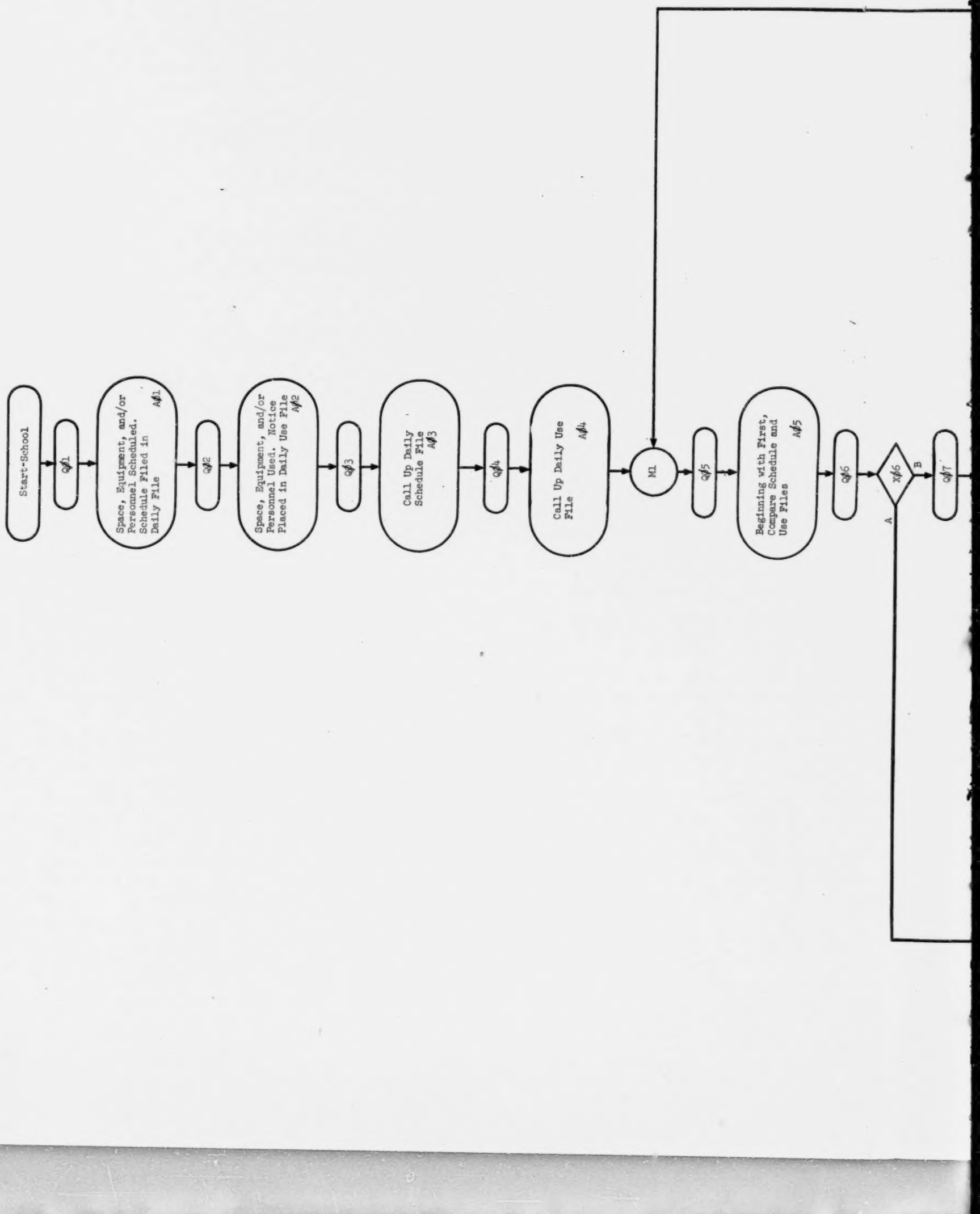

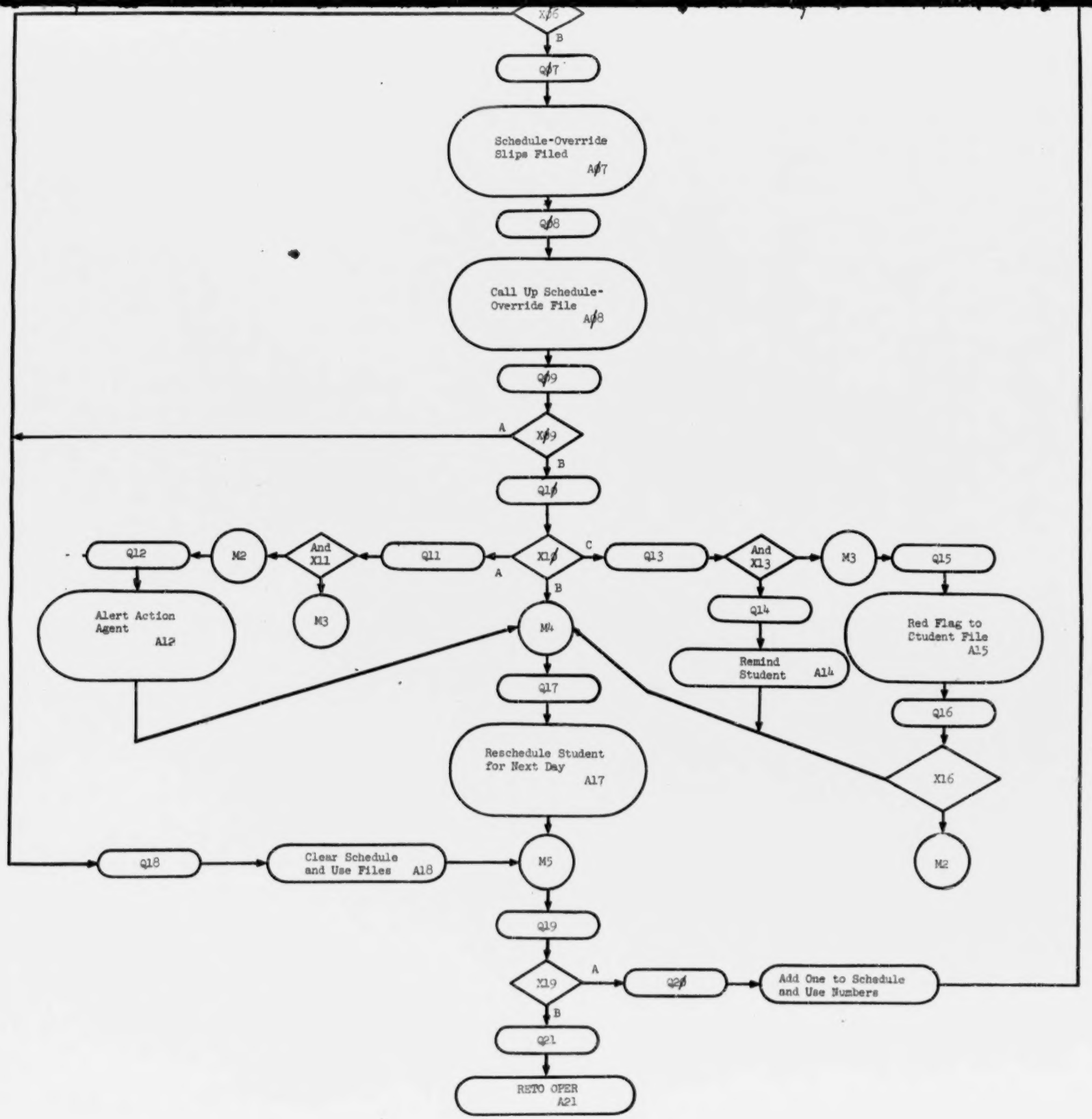
X06
B
Q07
Schedule-Override Slips Filed
A07
Q08
Call Up Schedule-Override File
A08
Q09
A
X09
B
Q10
Q12
M2
And X11
Q11
X10
C
Q13
And X13
M3
Q15
A
B
Alert Action Agent
A12
M3
M4
Q14
Remind Student
A14
Red Flag to Ctudent File
A15
Q17
Q16
Reschedule Student for Next Day
A17
X16
M2
Q18
Clear Schedule and Use Files
A18
M5
Q19
X19
A
Q20
Add One to Schedule and Use Numbers
B
Q21
RETO OPER
A21

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Comparison of Assignments with Fulfillment of These Assignments

In addition to the specific, daily schedule of activities, a student in the CPS has a number of more general types of assignments which he must fulfill. For example, when he registers, the student is given a form which permits him to secure course materials from the Materials Center. These supplies need not be picked up immediately, but they should be obtained within a reasonable amount of time. Although most students will do as requested, checks need to be established to locate those students who need additional reminders. This checking of fairly routine, nondaily assignments forms the content of Figure 4.

When a student is given such an assignment as securing course materials, this is noted in the assign file with a given date by which the activity must be completed (AØ1). As assignments are fulfilled, this fact, along with the number of the assignment, is noted in the fulfill file (AØ2). Periodically, the assign and fulfill files are compared (AØ3). If a student has fulfilled his assignment, the assign file is cleared (A11); if he has not filled the assignment but has not had a previous reminder (QØ7), he is reminded (A1Ø) and a red flag is sent to his file (AØ8). If the red flag file is full (XØ9 to M2), an action agent is alerted (AØ6). If the student has not filled the assignment and has been reminded previously (QØ5), an appropriate action agent is alerted (AØ6) and a red flag is sent to the student's file (XØ5 via M3 to AØ8).

When all of the assignments have been checked (Q14), the S&DS returns to normal operation.

Major Events Comparison: Schedule and Completion

In the career of a high school student certain events of singular importance occur--such events as his vocational planning. These events need not occur at precisely the same time for each student, but plans must be made to ensure that each student experiences them. The check to assure that each student experiences each major event appropriate to him is presented as Figure 5.

When a student enters the CPS, an approximate schedule is constructed for his major events. This schedule is placed in the major events file (AØ1). Whenever a major event is completed, this fact is noted in the completion file (AØ2). Periodically, these two files are compared (AØ3). If a scheduled event has been completed (QØ9), it is so recorded, and the schedule is cleared (AØ9). If the event has not been completed (QØ5), a student-counselor interview is scheduled (AØ5) and both the student and counselor are so informed (AØ7 and AØ8). This process continues (X1Ø to A11) until all student major events files have been examined (Q12). When this occurs, the system returns to other activities (A12).

Report of Student-Staff Contacts

Although most of the figures in this document deal with the operation of the S&DS per se, Figures 6 and 7 describe certain sensor activities--the experiencing and reporting of student-staff contacts. Figure 6 considers scheduled contacts; Figure 7, unscheduled contacts.

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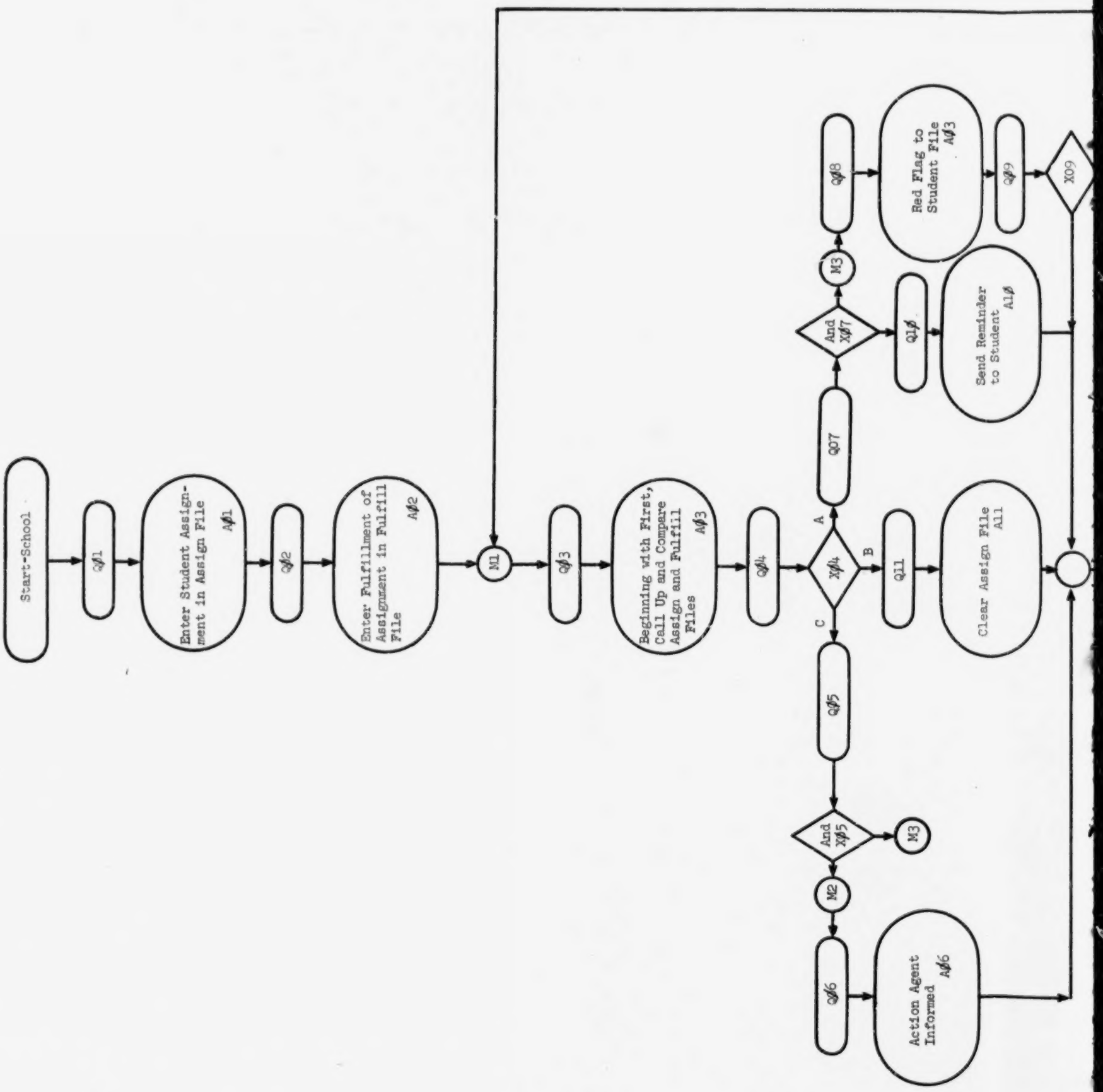

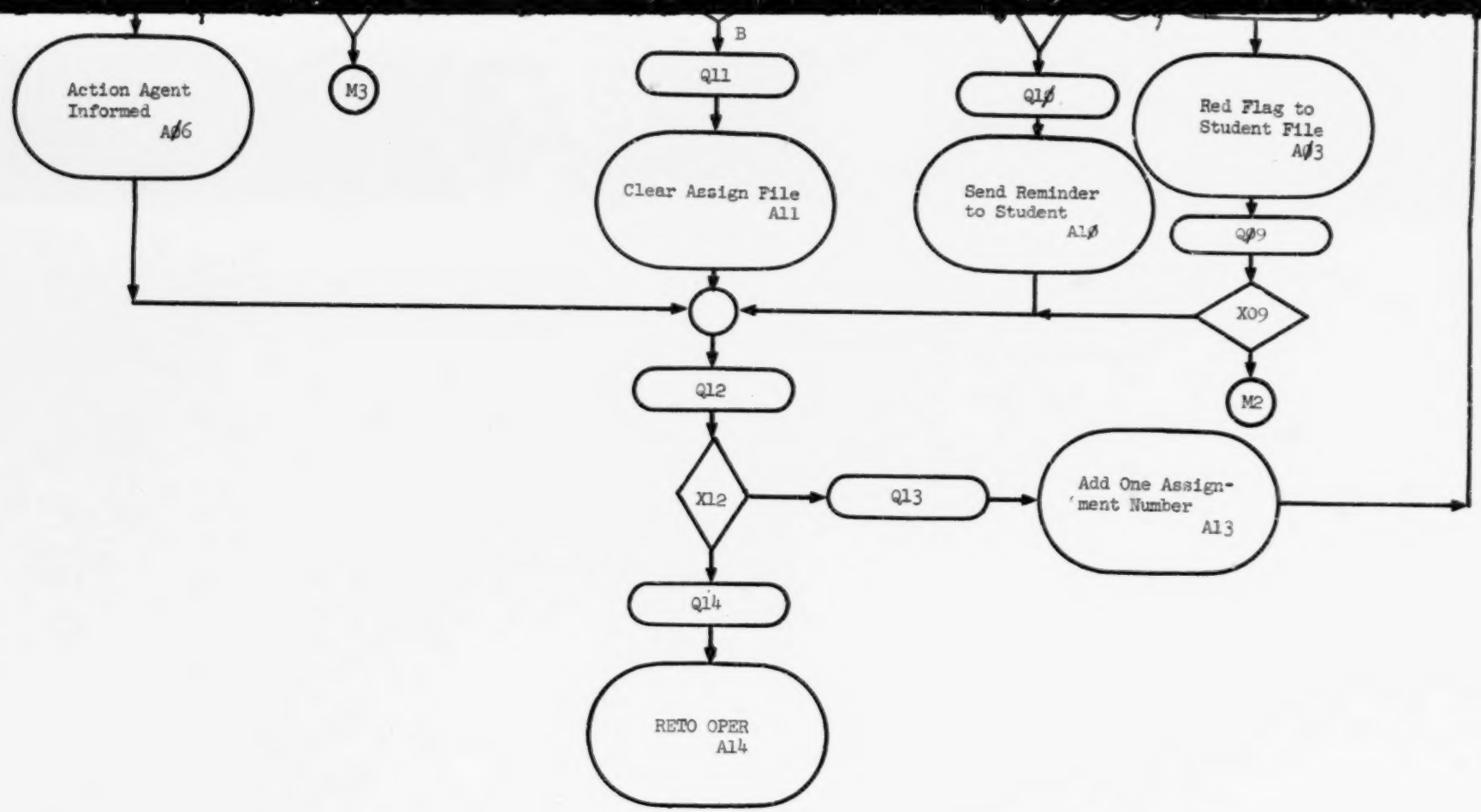

Figure 4. Comparison of Assignments with Fulfillment of These Assignments

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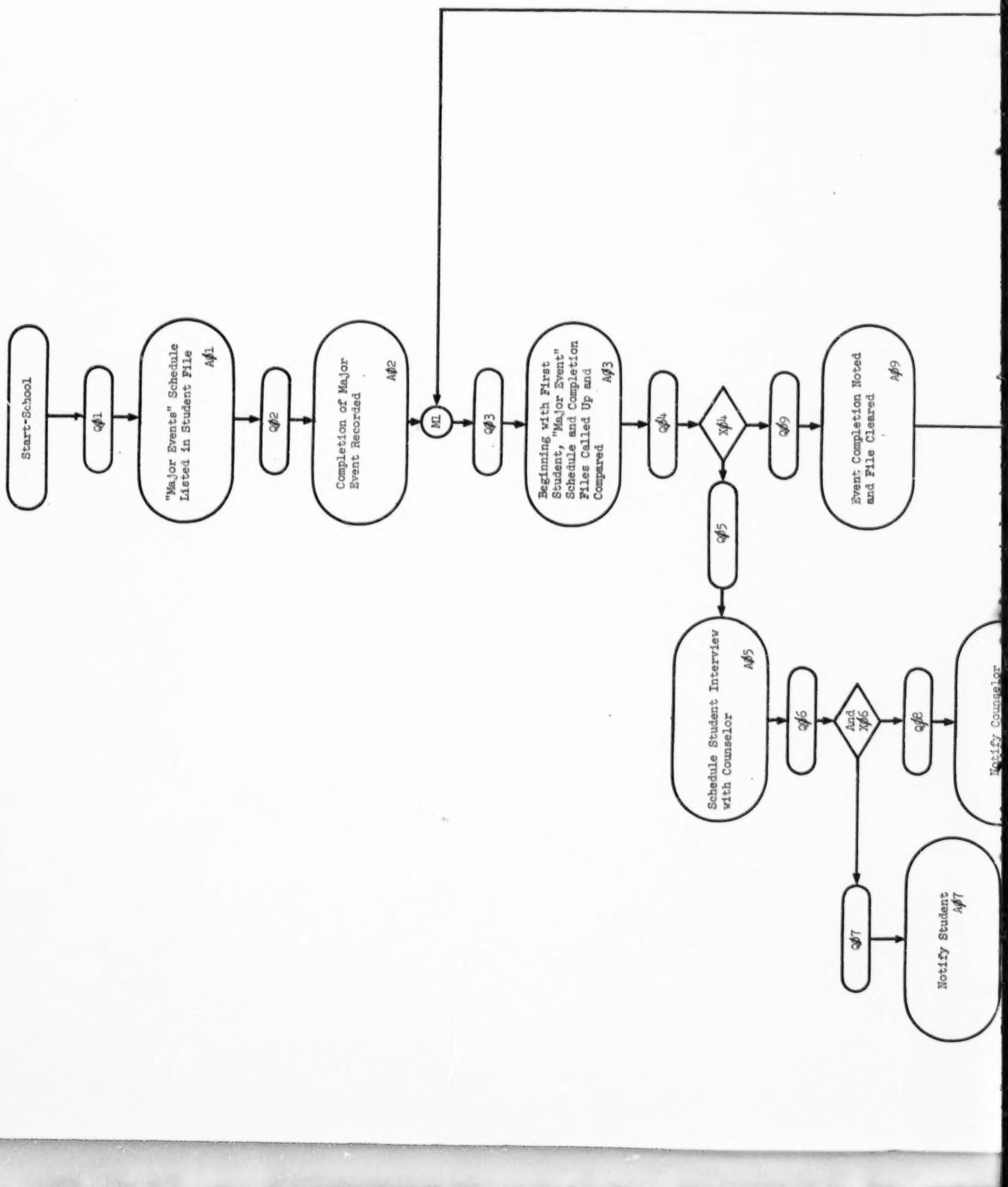

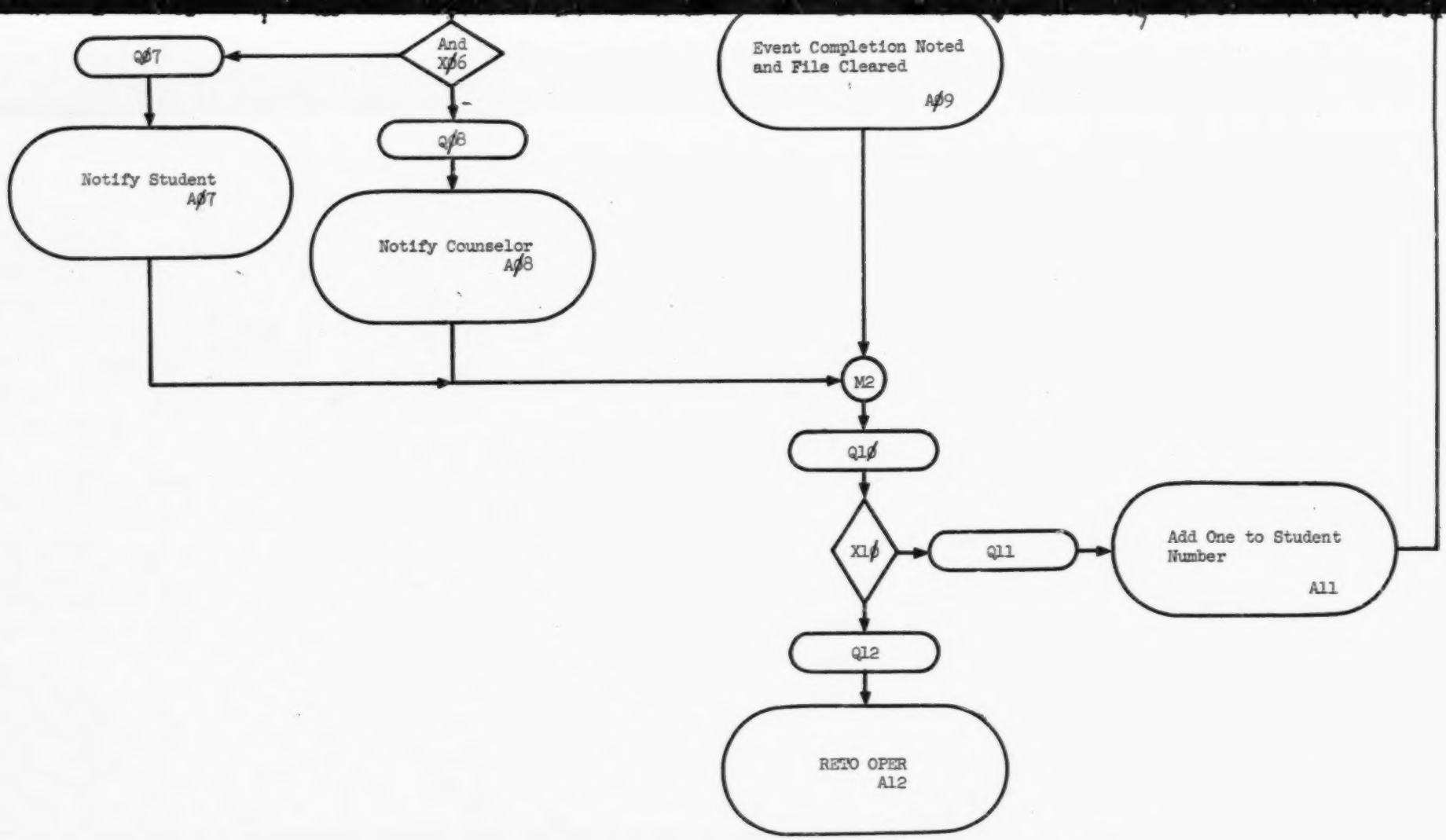

Figure 5. Major Events Comparison: Schedule and Completion

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Scheduled Contacts (Figure 6). When a staff member meets with students (AØ1), he may sense something very positive (QØ3) or very negative (QØ4) in one or more of the students. If this is the case, he notes such information on cards provided (AØ3 and AØ4).

Whether or not unusual information is perceived and recorded, an attendance card is submitted for each student (AØ5). The attendance cards go to the IPC where, if the student was present, a notation is made in his file of the group size and length of meeting (AØ7). If the student was present in school but missed the scheduled meeting, a red flag is sent to his file (AØ9). If the red flag file is full (X1Ø to Q11), an action agent is alerted (A11).

Unscheduled Contacts (Figure 7). Frequently staff members meet students on an unscheduled basis. Occasionally, these meetings have more importance than do the scheduled meetings. For this reason, staff members are asked to report unscheduled meetings with students whenever these meetings involve more than simply the exchange of pleasantries (or unpleasantries).

If, when a staff member meets a student (AØ1), he perceives anything unusual (QØ3), he records this (AØ3); otherwise, he simply submits a notation of the visit (AØ4). This information goes to the IPC where it is recorded in the student's file (AØ5).

Discussion. Securing staff cooperation in reporting student contacts is one of the more important, yet one of the more difficult, aspects of the Continuous Progress School. As has been mentioned, without the rigid scheduling of student-staff contacts, students may go for long periods of time without receiving appropriate help, encouragement, or supervision. Thus, knowing the number, type, and length of student-staff contacts is essential; but preparing and filing such reports can be tedious and time-consuming, and every effort should be made to simplify the process.

For scheduled contacts, schedule cards with student identification, size of group, and nature of meeting are prepared by the IPC. These schedule cards are picked up each day by the student and submitted as he attends his various meetings.

Unscheduled contacts are handled in a similar manner. When a student registers, he is given a supply of "unscheduled contact" cards. When a staff member has a significant unscheduled visit with a student, he requests a card which he then fills out and submits. As the student's supply of such cards diminishes, he requests a new supply. The alternative of having the teachers carry the supply of cards for unscheduled contacts needs to be considered. The best procedure for determining this process is an empirical study of the methods.

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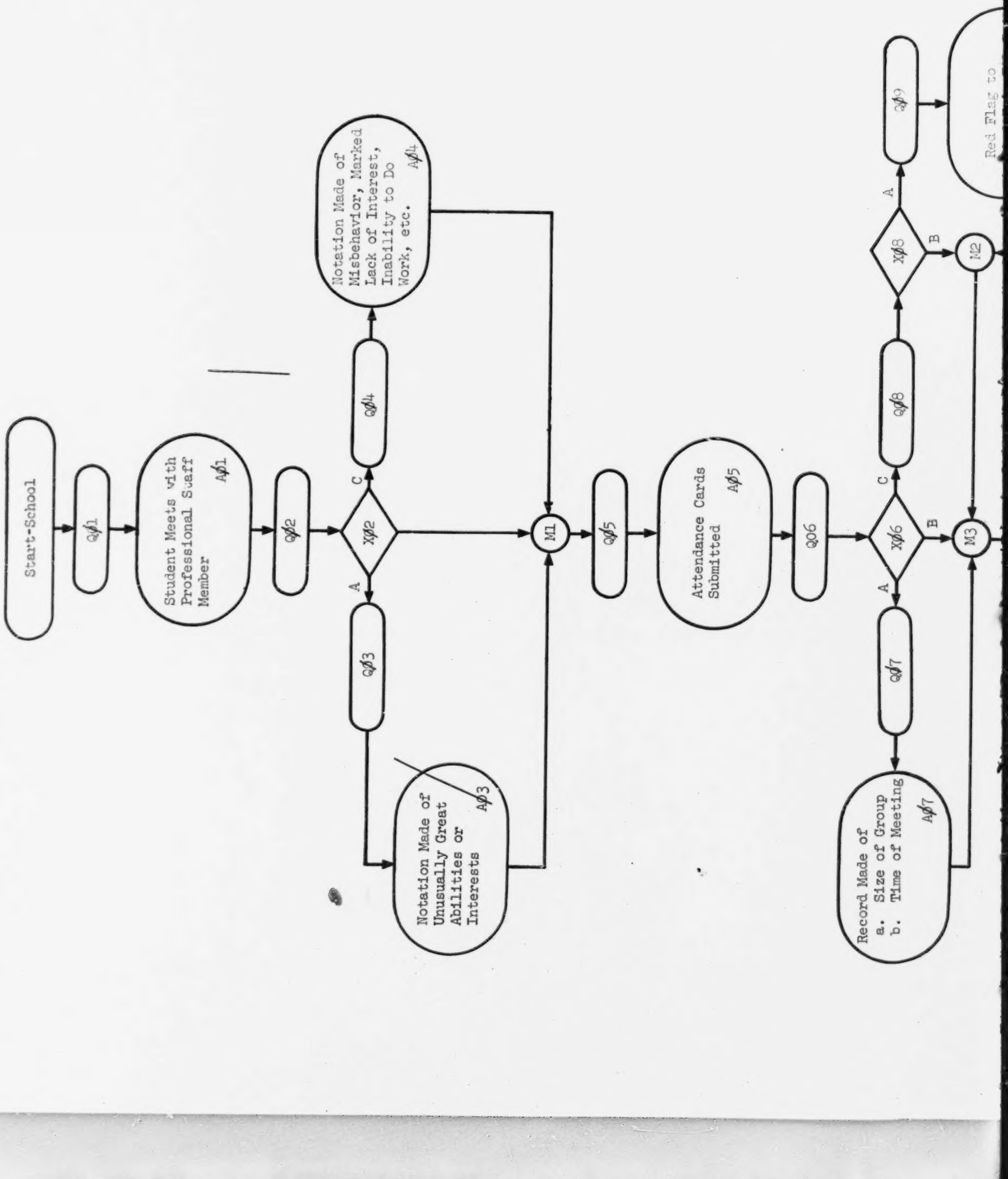

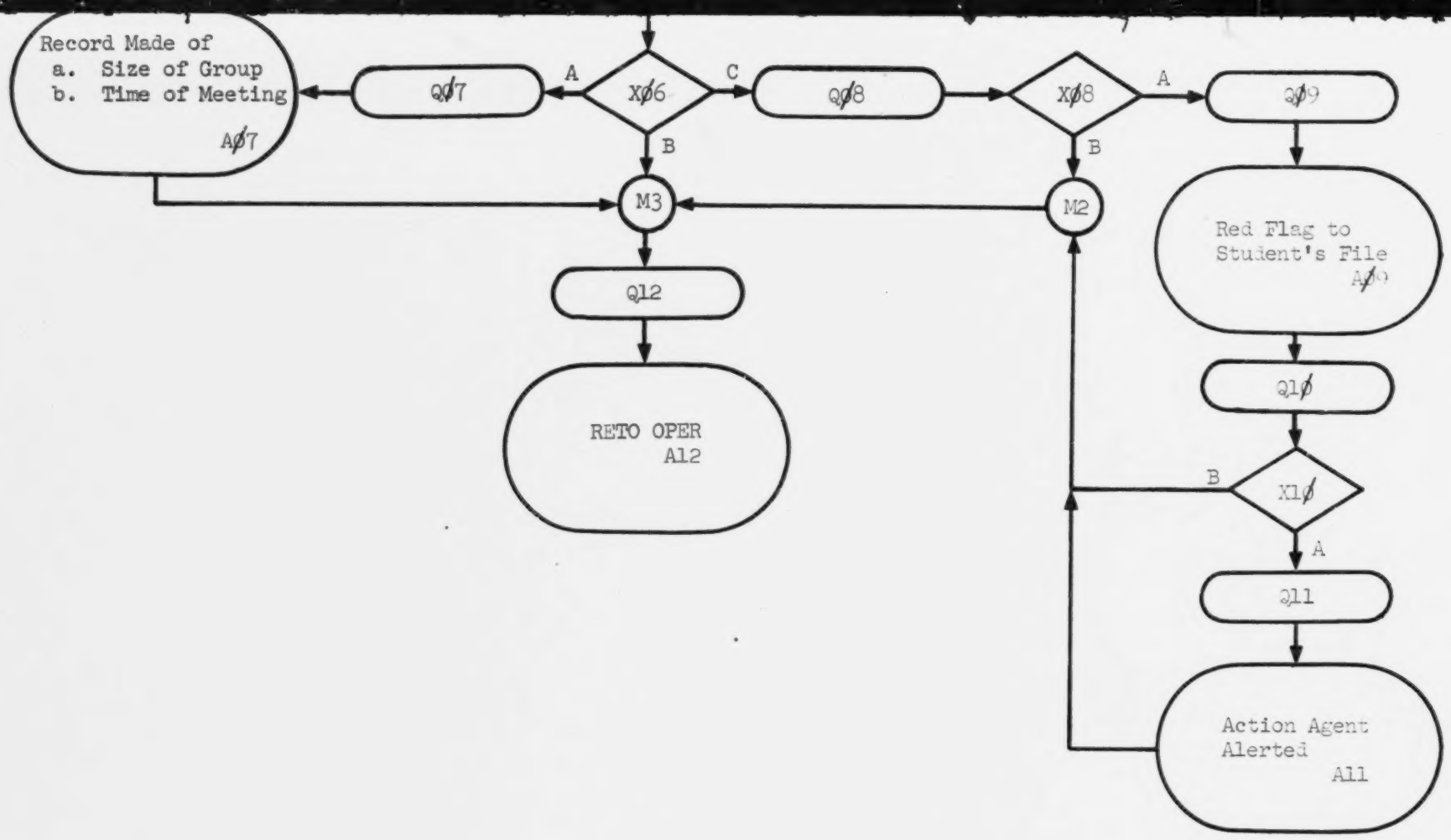

Figure 6. Report of Scheduled Student-Staff Contact

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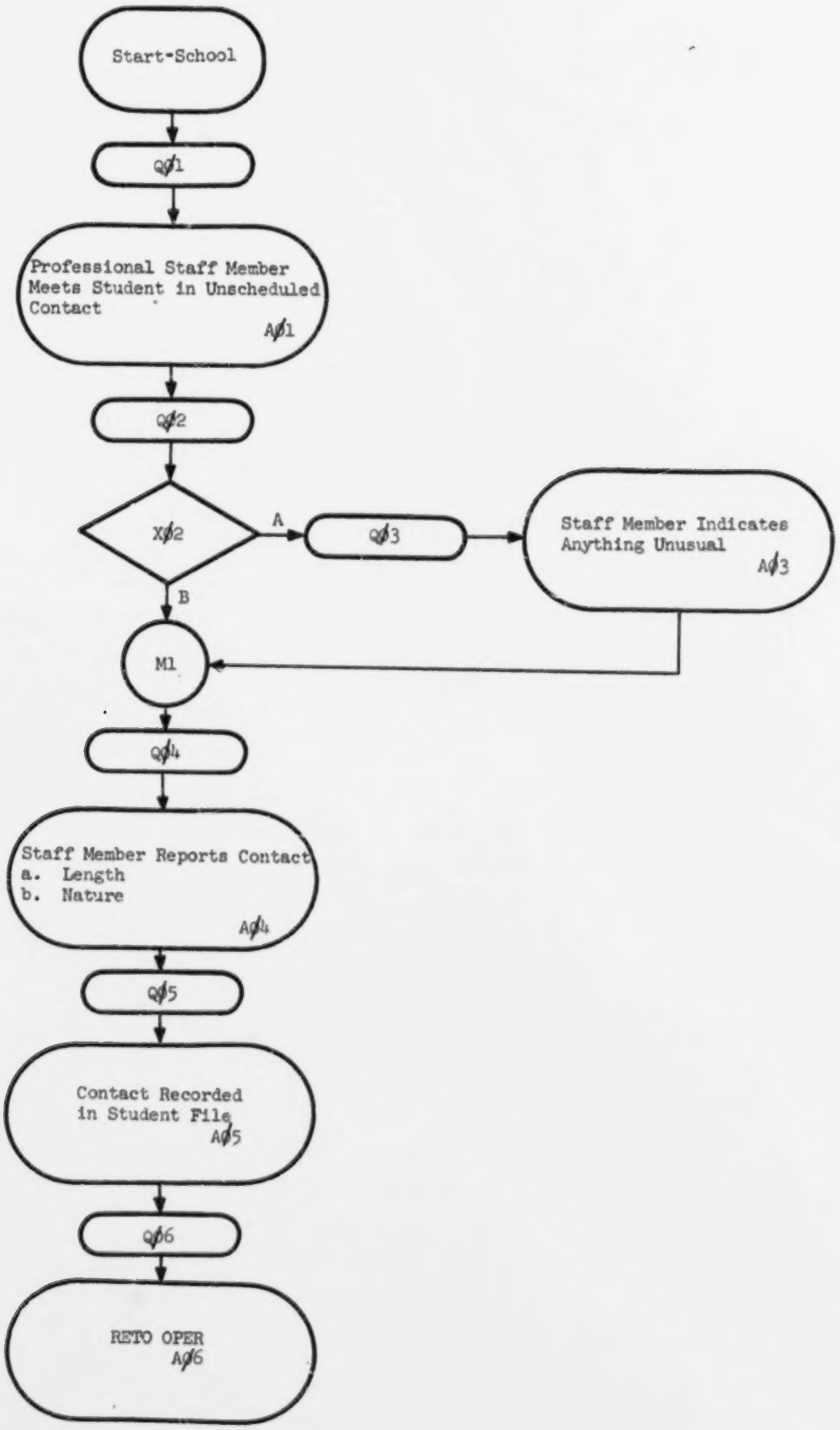

Figure 7. Report of Unscheduled Student-Staff Contact

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Review of Student Contacts with Staff

Figures 6 and 7 were concerned primarily with the sensor function of student-staff contacts. Figure 8 depicts the process of checking to make sure such contacts are occurring with sufficient frequency and duration and are of appropriate types.

All student-staff contacts are recorded in the files of individual students (AØ1 and AØ2). Periodically these files are checked, first for number of contacts (AØ3) and then for type of contacts (AØ9). If there have been too few contacts or if different types of contacts have not been appropriately represented, a red flag is sent to the student's file (AØ7 and A13). If the red flag file is full (XØ8 to M2 and X14 to M5), an action agent is alerted (AØ6 and A12). If the lapse in contacts has been particularly severe, an action agent is informed in addition to the red flag (XØ4 via XØ5 to AØ6 and M3; X1Ø via X11 to A12 and M6).

After the contacts in a given file have been checked, outdated contacts are removed from the file (A17) and the next student is checked (A19), unless all students have been completed (Q2Ø), in which case the system returns to normal operation (A2Ø).

Comparison of Current Emphases and Interests with Student Plans

As students mature and as their experiential backgrounds increase in breadth and depth, their educational and vocational interests and plans often change. Many students who recognize these changes occurring, take the initiative in contacting appropriate school personnel. Others either do not sense the changes or are hesitant to approach the counselor or other appropriate person. To guard against such a communication breakdown, a periodic comparison should be made between the student's stated plans and his actual activities. This comparison forms the content of Figure 9.

The first activity block in Figure 9 (AØ1) suggests that significant comments, from various school personnel, about a student's abilities and/or interests are recorded in his file. On a periodic basis, perhaps semiannually, the student's educational-vocational plans are called up (AØ2) and compared with his most recent interest-ability record (AØ3). If the record is generally consistent with the plan, this fact is noted in the student's file (AØ9), along with any minor discrepancies. Sometimes, stated plans and actual records are inconsistent (branch A from XØ4). In this event a counselor-student interview is scheduled (AØ5) and both the student (AØ7) and the counselor (AØ8) are notified of this interview.

This procedure is followed with each succeeding student (branch A from X1Ø via A11 to M1) until all comparisons have been made (Q12).

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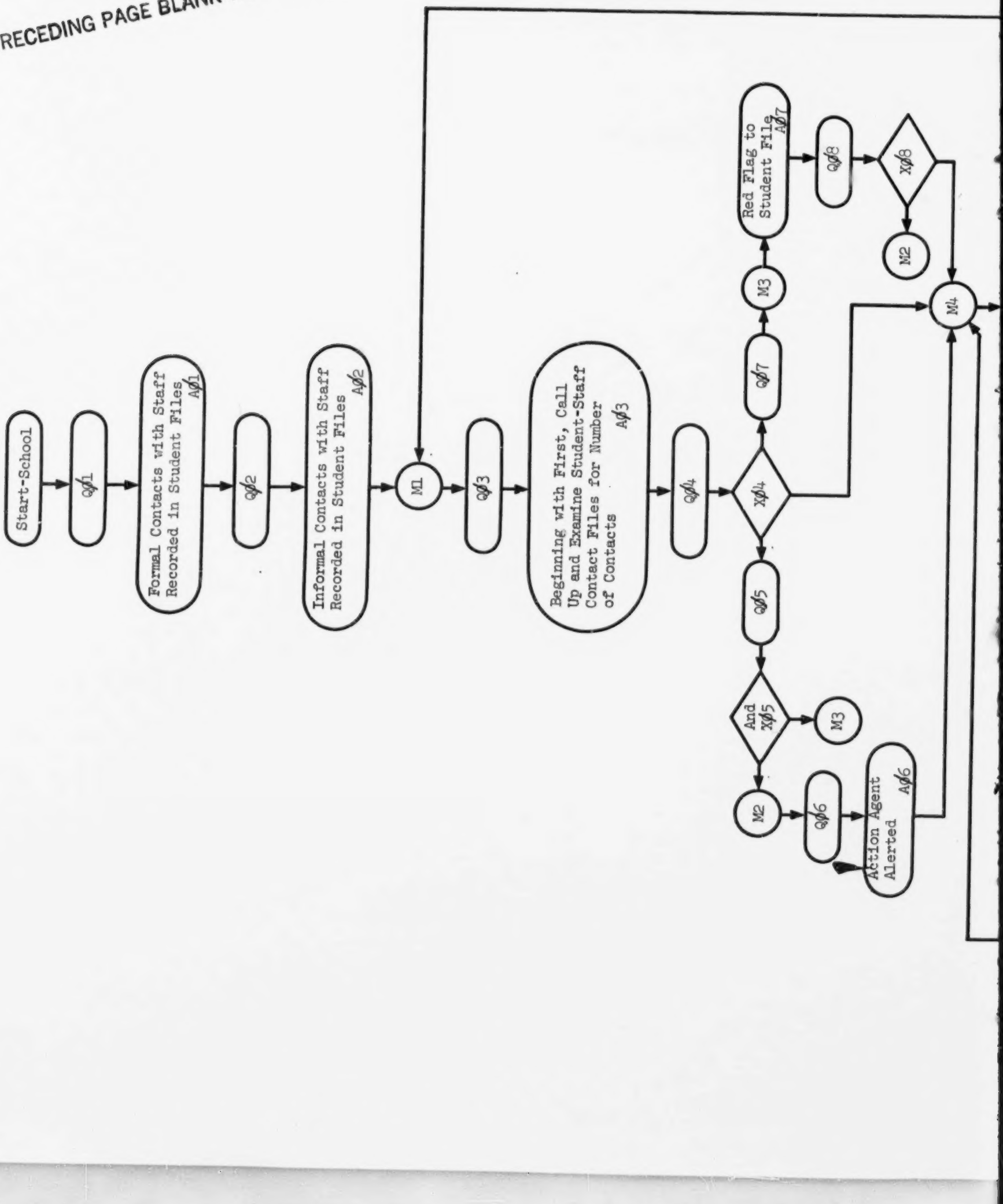

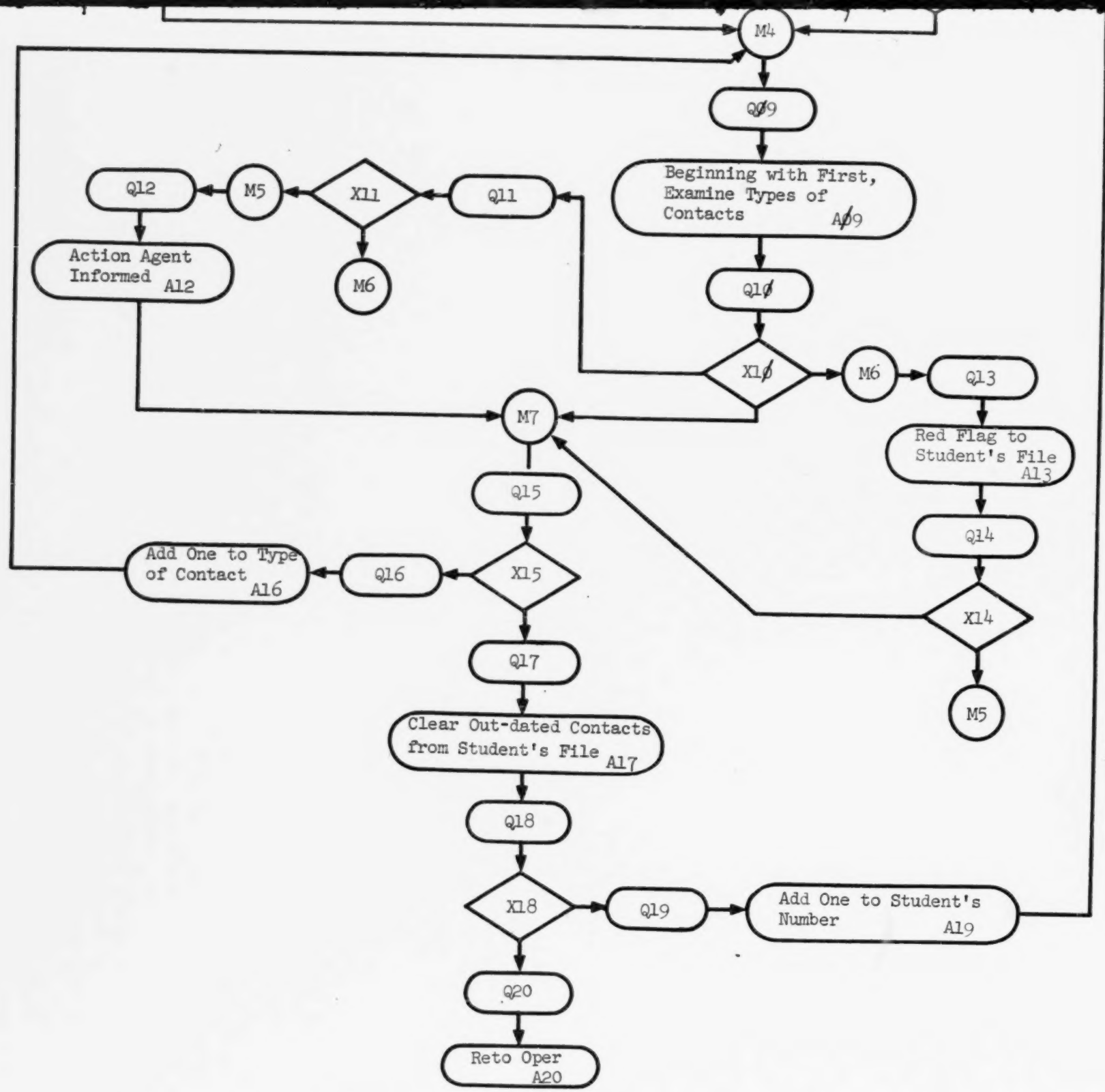

Figure 8. Student Contacts with Staff

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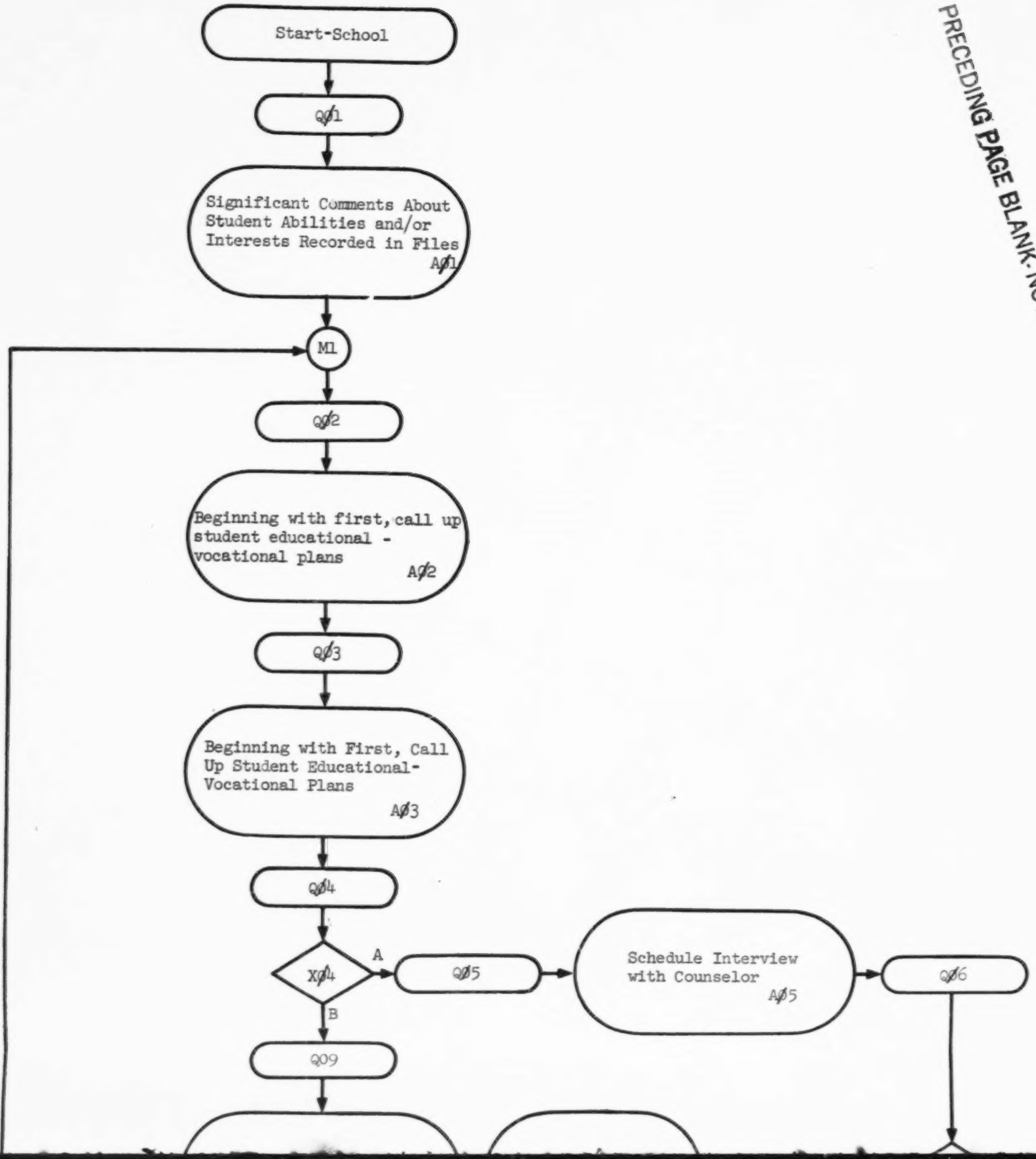

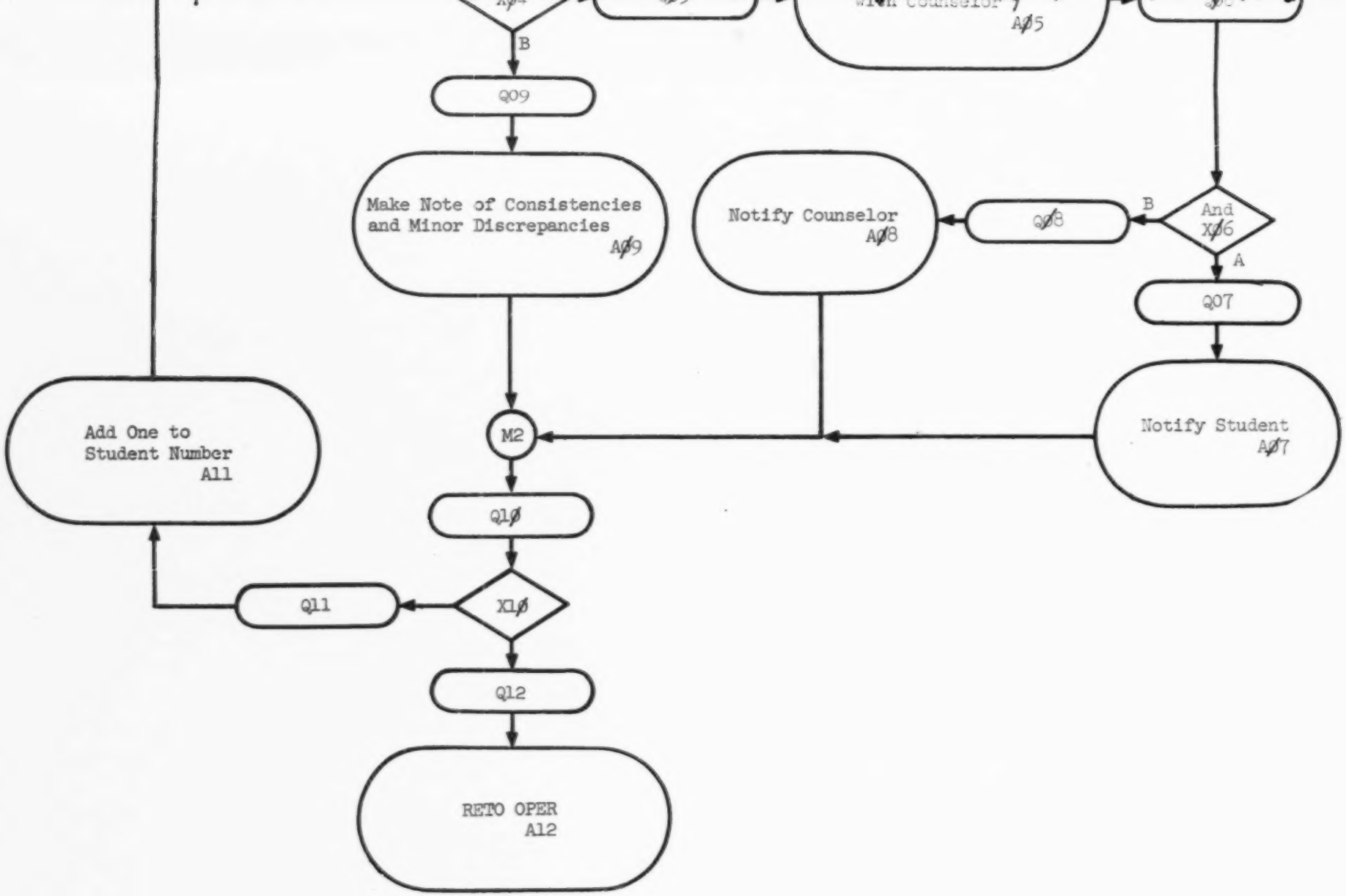

Figure 9. Comparison of Current Emphases and Interests with Plans

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Social Interaction of Students

A frequently expressed concern for the students in any school is that they will not have an appropriate amount and type of interaction with other students. This fear becomes greatly magnified when attention is directed to the vast amount of individually spent time and effort in the CPS. Real concern is felt for the student who is not socially aggressive.

As is true with many other aspects of the CPS, the felt fear may become a reality unless special checks are instituted. Such checks are described in Figures 10 and 11. Data gathering on nonacademic groups forms the content of Figure 10. Checking group data, both academic and nonacademic, is the purpose of activities in Figure 11.

Membership and Participation in Nonacademic Groups. Two strands are given in Figure 10. The left strand, using "3" as the initial symbol in the labels, depicts the formation and meeting of student groups. The right strand represents the activities of the school.

In the CPS, as in any other school, many social, activity, and semiacademic clubs exist. New clubs are formed and members are added to or dropped from the rolls of already existing clubs. These processes are represented, beginning with 3AØ1 of Figure 10, in which a new organization is shown as beginning; and continuing with 3AØ2 in which the roll is depicted as being forwarded to the IPC. The group meets periodically (3AØ3) and may accept new members (3QØ5), in which event a revised roll is forwarded (3AØ5), or may not accept new members (strand B from 3XØ4). Regardless of whether new members are accepted, attendance is forwarded to the IPC (3AØ6). The group continues with its regular meetings (strand A from 3XØ7 to M1) until the organization is terminated (3AØ8).

When club membership rolls and revised rolls are received at the IPC (2AØ1), they are examined for eligibility of membership (2XØ2). A note is posted in individual student files of those eligible for membership (2AØ6). Students may not be eligible for membership because of academic probation, membership in too many other organizations, behavior problems or any of several other reasons. In any case, if the student cannot be given immediate, unqualified membership (2QØ3), he is scheduled with his counselor (2AØ4 and 2AØ5) to discuss the problem.

When the IPC receives attendance lists (2AØ7), these lists are compared with organizational membership (2AØ8) to check actual student attendance. If a student was in attendance, this is noted in his file (2A13); if he was not present, a red flag is sent to his file (2A1Ø). If the red flag file is full (2Q12), an action agent is alerted.

Adequacy of Student Social Interaction. Figure 11 describes the activities involved in checking student social interaction. Student-student contacts are indicated as being recorded in AØ1. These contacts are both academic and nonacademic. The material indicated in AØ1 is generated in activities such as those described in Figures 6 and 10.

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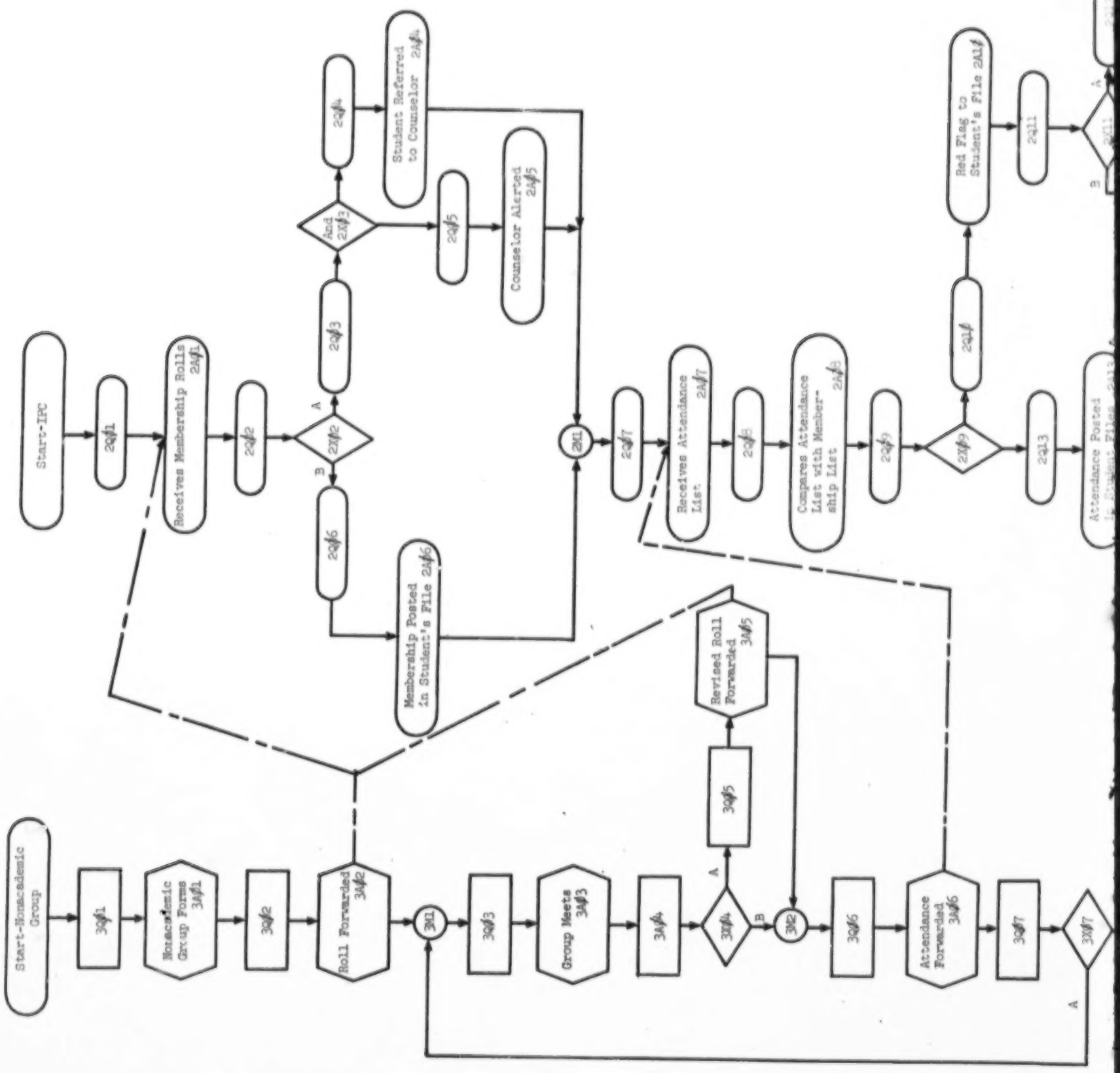

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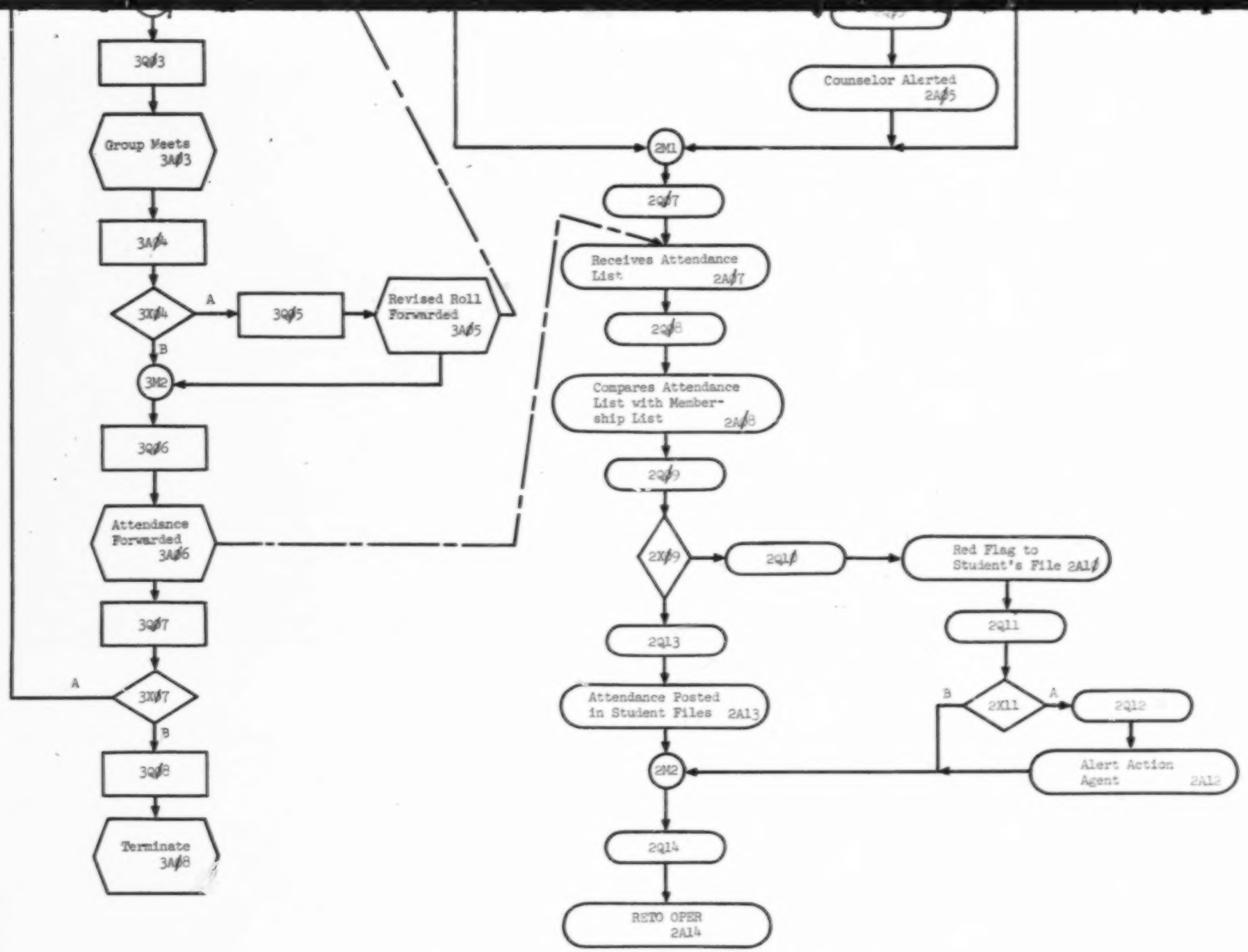

Figure 10. Membership and Participation in Nonacademic Groups

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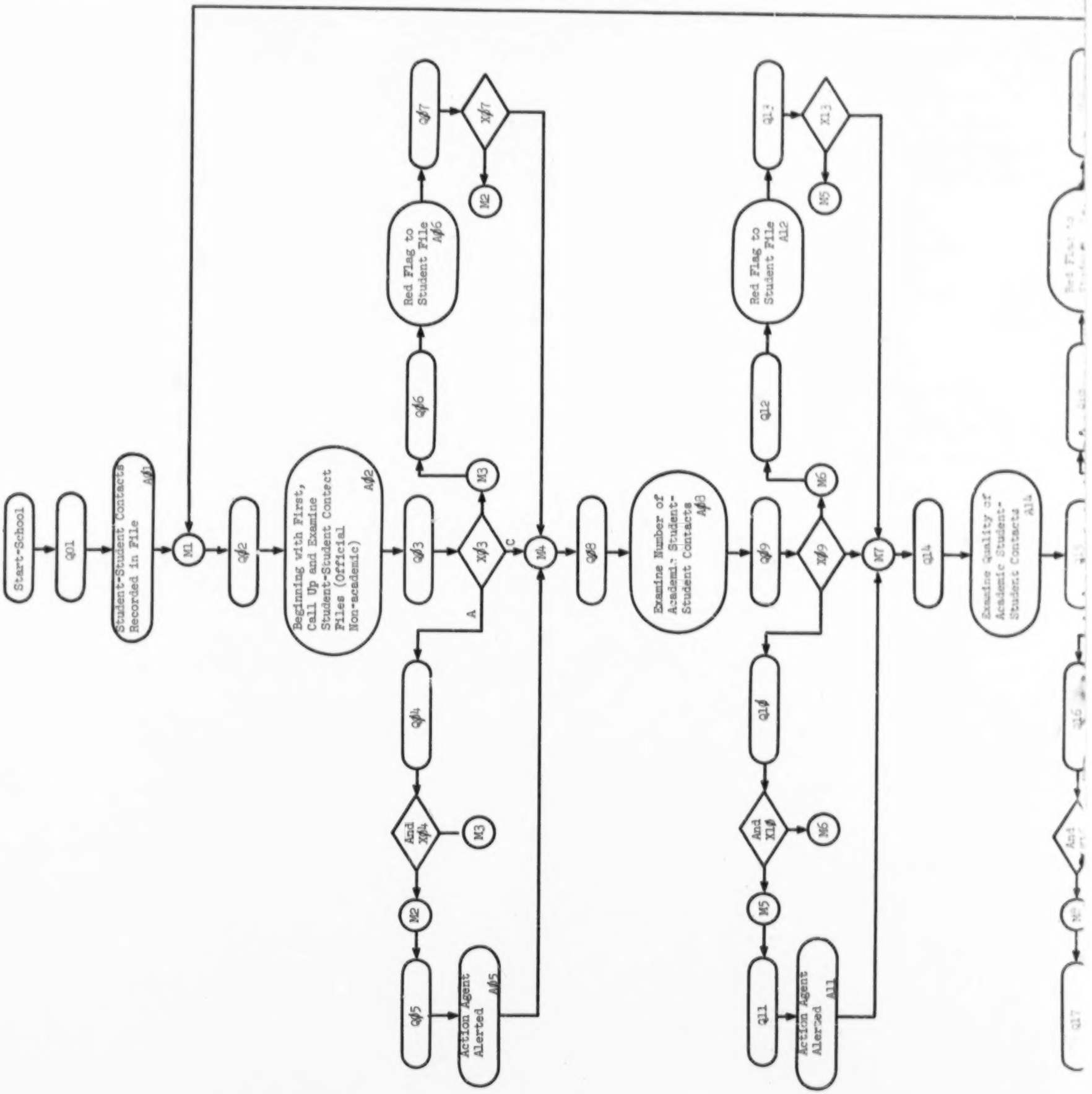

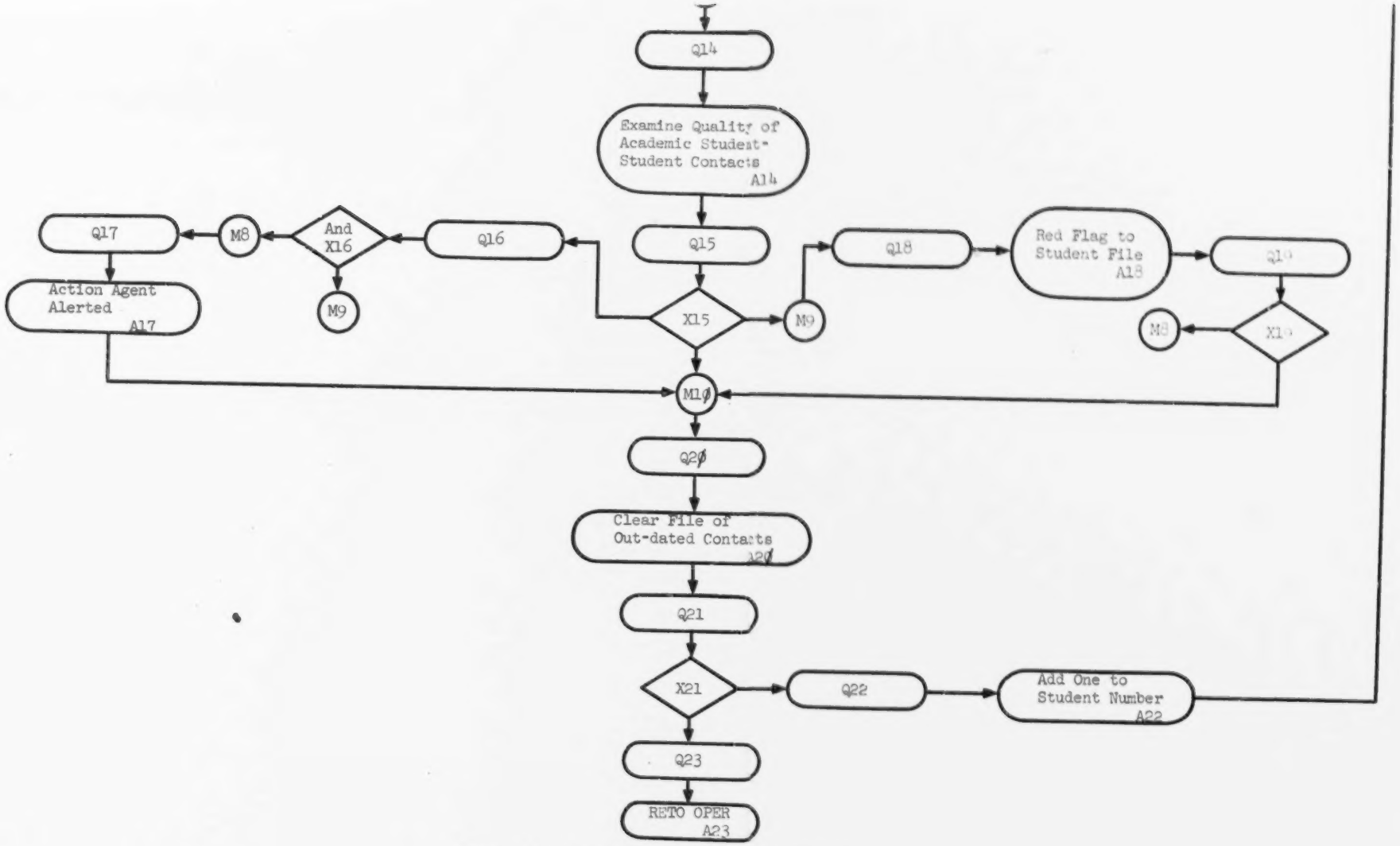

Figure 11. Check on Student-Student Interaction

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At predetermined intervals student-student contact files are called up and examined (AØ2). The first check made is on number of official, nonacademic student-student contacts (XØ3). If there have been enough, the S&DS proceeds via branch C and M4 to QØ8. If the student has had fewer nonacademic contacts than is considered desirable, a red flag is sent to his file (AØ8). If there is a serious discrepancy between the appropriate number and the actual number of contacts (QØ4), the appropriate action agent is informed (AØ5) and a red flag is sent to the student's file (XØ4 to M3). If the red flag file is full (XØ7 to M2), an action agent is alerted.

Two additional, similar checks (AØ8 and A14) are made of student-student contacts. The first (AØ8) covers number of academic contacts. The second (A14) checks the quality of the contacts. In making this check, the concern is with such aspects as size of group, actual vocal participation of the student, and group stability (whether the student has fairly frequent contacts with some of the same students or whether he is constantly being placed with new students).

When a student file has been checked, outdated contacts are cleared and the S&DS proceeds to the next student (A22), until all files have been examined (Q23).

Operation of Red Flag Files

The red flag files constitute the S&DS approach to handling an accumulation of miscellaneous student failings. Normally, any one or even several of these failings would not be sufficient to cause official concern. However, an accumulation across a number of areas may indicate a problem needing attention. Operation of the red flag files is described in Figure 12.

AØ1 represents the placing of red flags in student files. Periodically, these files are checked (AØ2 and AØ3). If a student has more than the permissible maximum of red flags, he is scheduled with an action agent (AØ5) and both he and the agent are informed of the schedule (AØ7 and AØ8).

The red flags lose their significance if action is taken to correct the situation that they symbolize. This fact is recognized and provision is made for clearing files of outdated flags (AØ9).

Successive student red flag files are examined (A11) until all have been checked (Q12).

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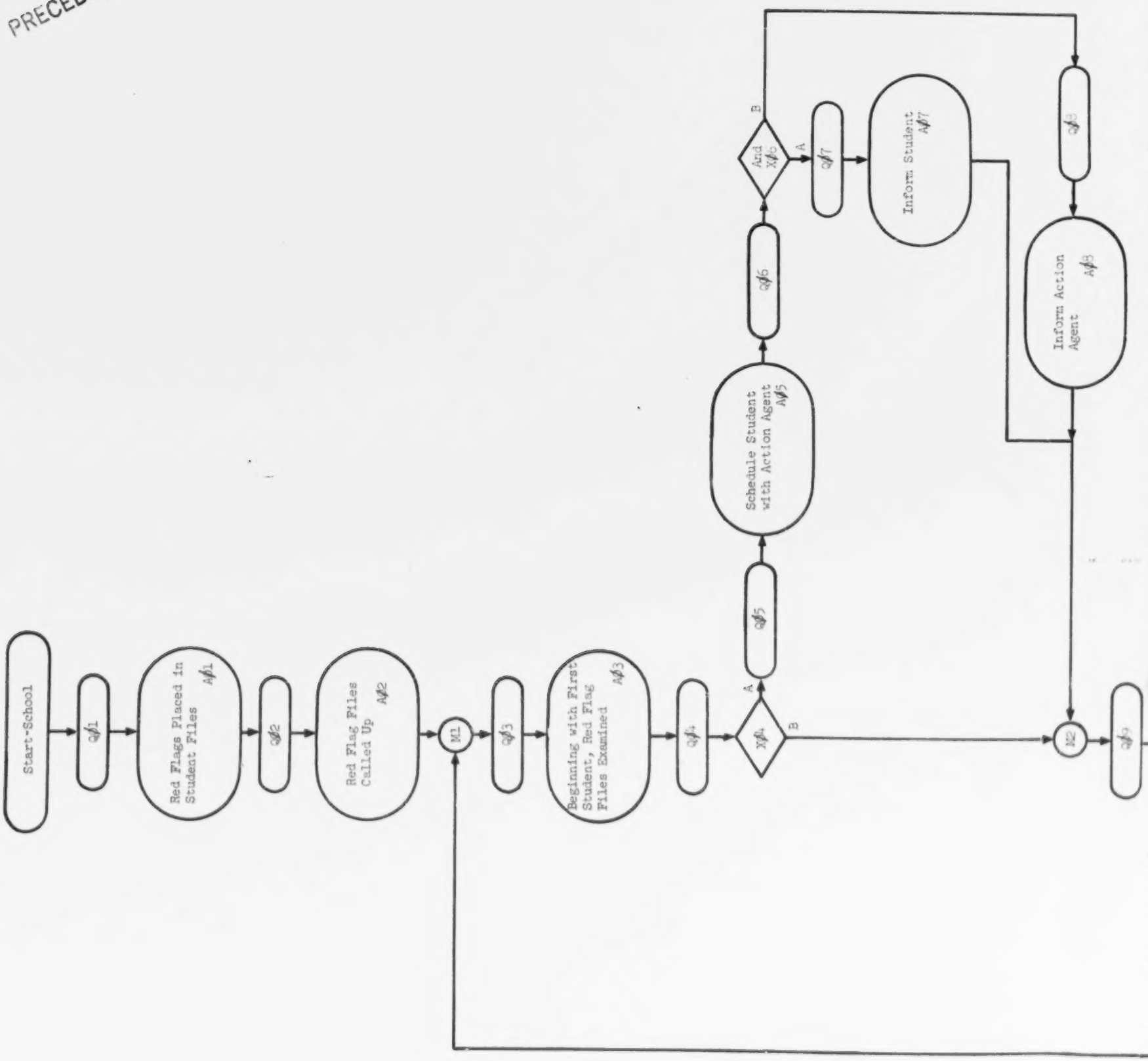

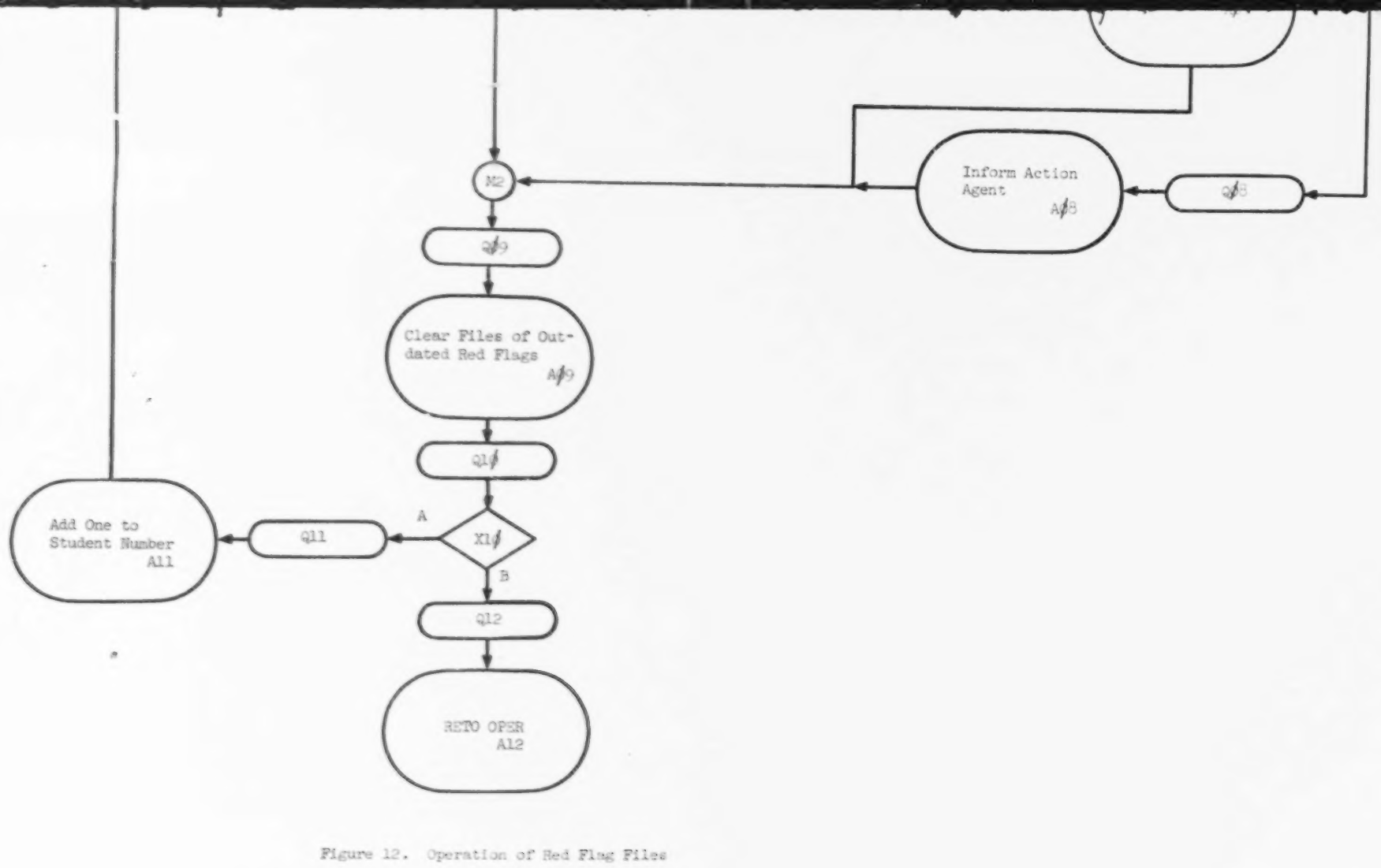

Figure 12. Operation of Red Flag Files

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MISCELLANEOUS FUNCTIONS

All of the functions described in the preceding section are viewed as being essential to the successful operation of the CPS. In this concluding section two additional functions are described. These functions can facilitate operation, but are not essential.

Sensitizer

Often when a staff member is working with a student, or even when the S&DS refers a student for help, the problem is viewed as being so serious that any additional infraction, no matter how minor, should be referred immediately to the staff member concerned. This function is called the "sensitizer" and is described in Figure 13.

The operations depicted in Figure 13 are very simple. Either a staff member (AØ1) or the S&DS (AØ3) decides that activation of the sensitizer is needed for a given student (XØ2, branch A, or XØ4, branch A). The sensitizer is activated (AØ5), and it then causes the student's red flag file to alert the staff member immediately to any new failure of the student (AØ6). The sensitizer remains in operation until the staff member determines that it is no longer needed (XØ7, branch A), at which time the sensitizer function is removed (AØ8).

Real-Time Analysis of Performance Quality

In a school possessing an advanced IPC, some real-time functions may be desired. One such real-time function may be scoring tests and reporting results to those with a "need to know." Provision for such a function is described in Figure 14.

Figure 14 begins with student's quality expectancies being entered (AØ1) and continues with student responses being transmitted to the IPC (AØ2) where they are evaluated (AØ3) and a final score is reached (AØ4). This score is then compared with the quality expectancy (AØ5); the comparison is reported to the action agent (AØ6); and a record is made in the student's file that he achieved his expectancy level (A1Ø), that he did not reach his expectancy level (AØ8), or that he failed the test (AØ9).

With the recording of the test results, the IPC's performance is completed.

SUMMARY

This document has described the Continuous Progress School Surveillance and Detection System--a system designed to (a) monitor or survey student activities, (b) detect the presence of trouble when it occurs or is imminent, and (c) alert appropriate personnel for action.

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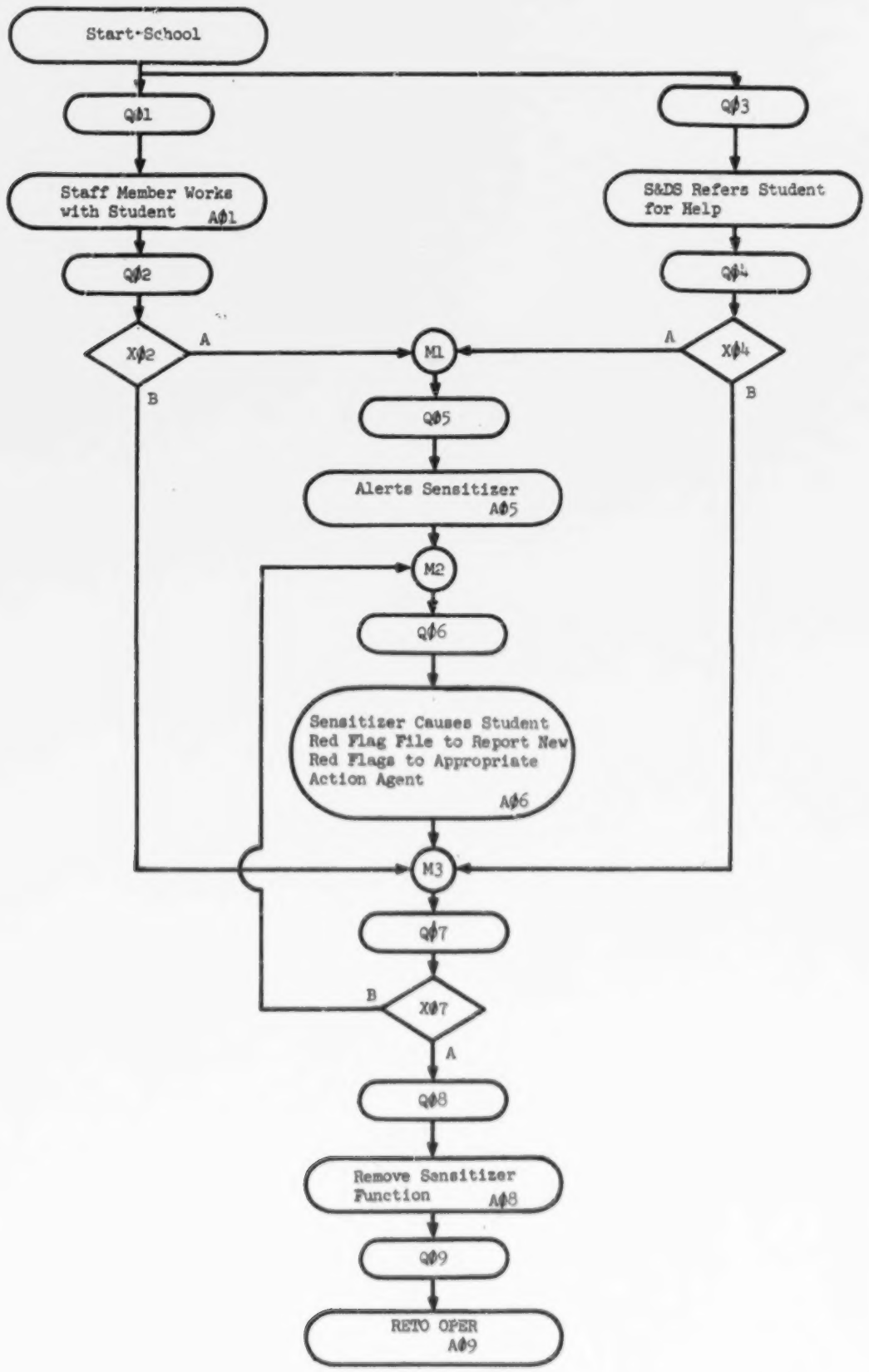

Figure 13. Sensitizer

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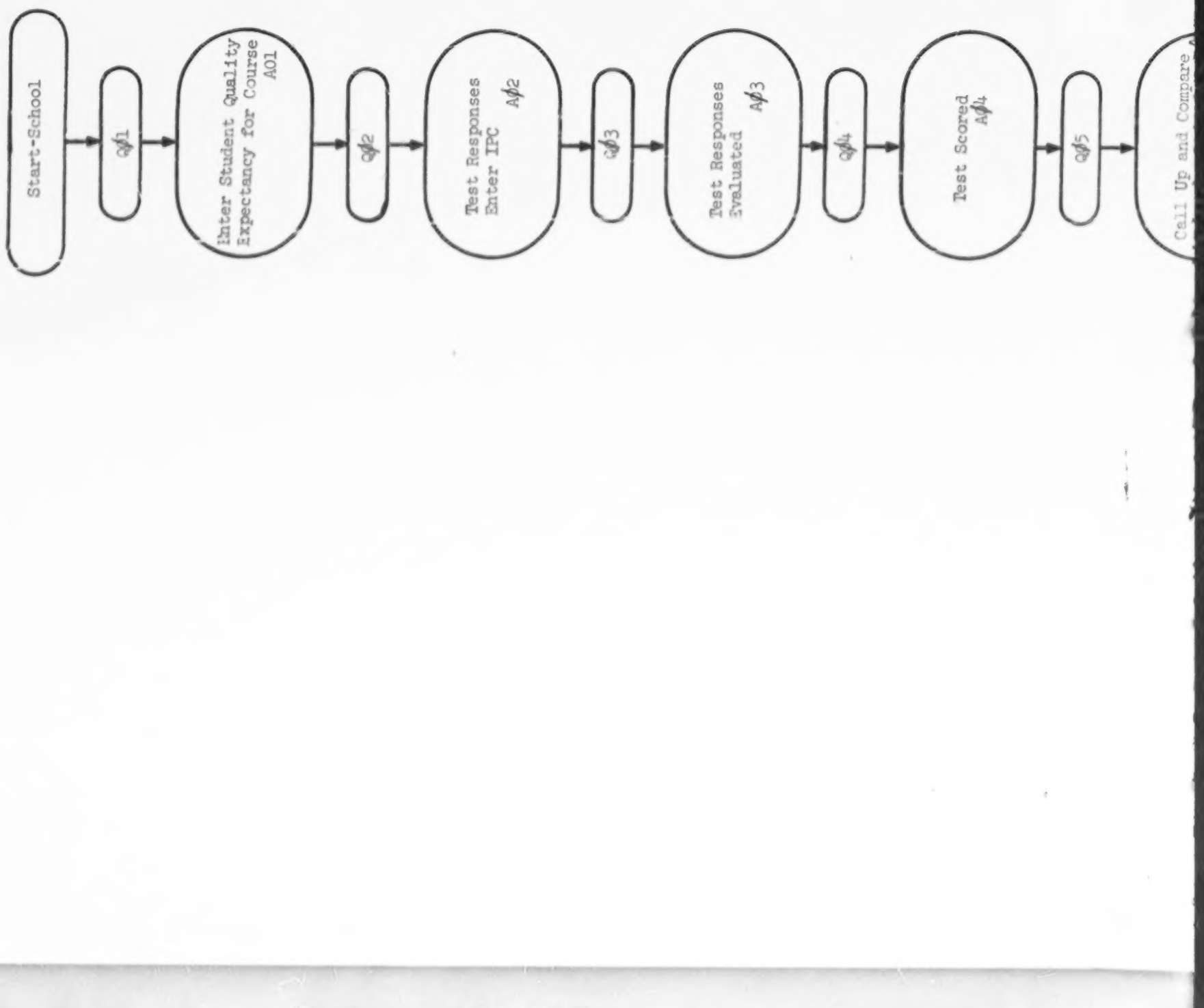

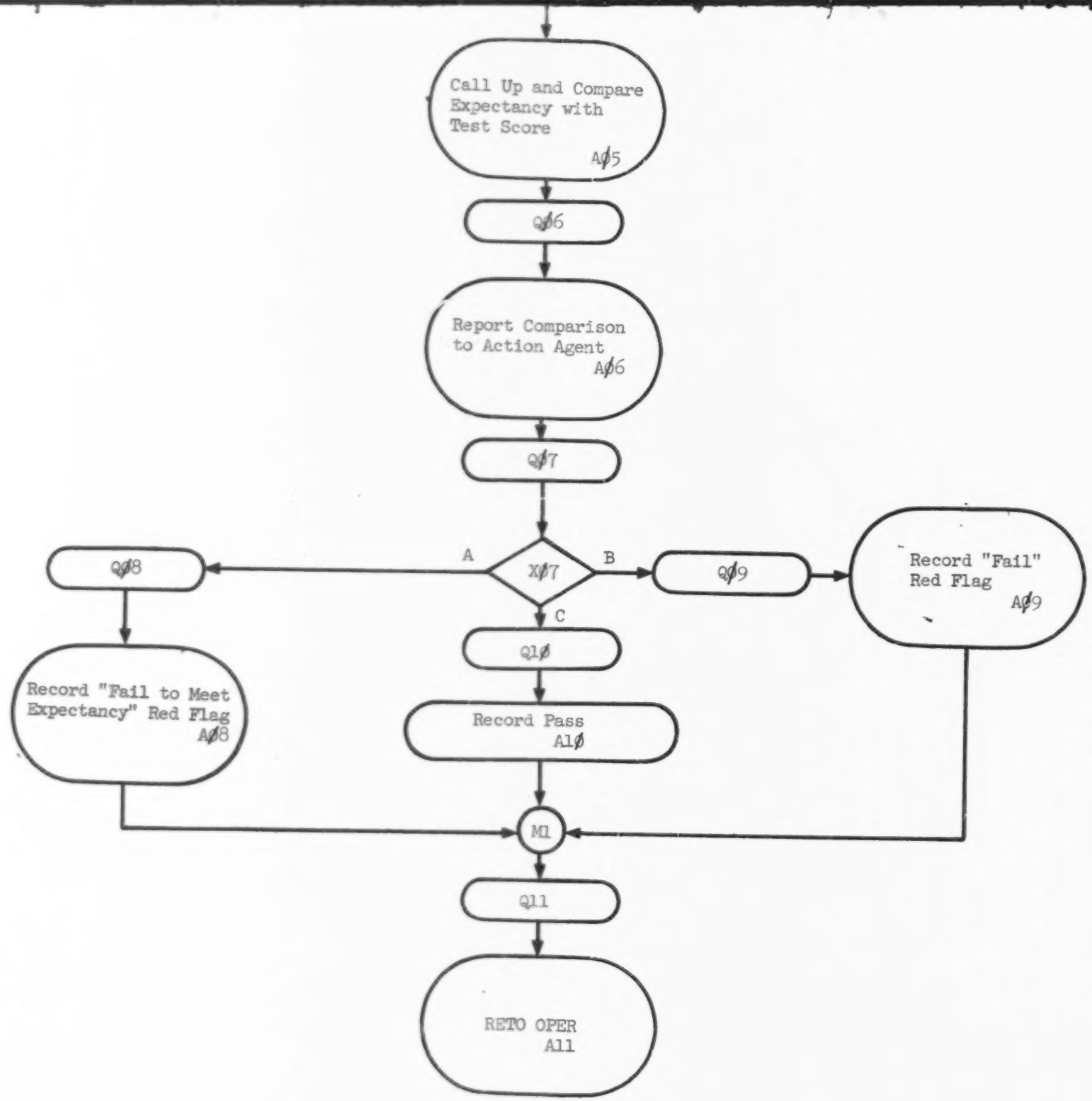

Figure 14. Test Scoring

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Although the total subsystem concerned with surveillance and detection might be considered as involving sensing, processing, and executing, for our purposes the S&DS is viewed as existing within the Information Processing Center. This means that the sensors and the executors are external to the S&DS, though essential to its operation.

For the S&DS to operate, two types of information are necessary: predictor or anticipatory information (type I) and performance information (type II). Type I information is everything from expected completion dates to daily schedules and from long-range educational plans to the frequency with which the counselor feels a given student should have nonacademic, school contacts with other students. Type II information comprises actual student performance with respect to these expectations.

When type I and type II information are both available to the system, periodic comparisons are made and action is taken. The comparison might simply be of a student's activities with his schedule for that day, or it might be of the student's current behavior with his recorded educational-vocational plans. Action taken in respect to the comparison depends on the outcome of the comparison. In most instances the comparison will be positive. In most such cases no action is implied although, in some of the more significant instances, recorded confirmation of performance may be desirable. When the comparison is negative, that is, when the student has not performed as scheduled or predicted, a notation of such failure (red flag) is placed in the student's file. If the failure is sufficiently serious, an appropriate action agent (e.g., counselor, teacher, administrator) is alerted so that action can be taken.

The red flag files operate in two ways. They have a predetermined capacity and, when they get full, the spillover is immediately noted. In addition, at predetermined intervals the files are checked. If a file has reached a certain level, the appropriate action agent is notified.

The S&DS is designed to locate students who are likely to get into difficulty before this actually occurs and to sense when students are working below capacity. In the CPS, the S&DS is made mandatory by virtue of changes wrought in the student-teacher and student-student relationship. However, any school, regardless of its program, would do well to consider the advantages inherent in such a system. A good counseling service incorporates many of the features mentioned in this document, but seldom is an appropriate mechanism established to ensure effective operation.